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The Milroy Lectures

ON

THE ETIOLOGY OF ENDEMIC GOITRE.

Delivered before the Royal College of Physicians of London on Jan. 7th, 9th, 14th, and 16th, 1913,

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MAJOR, INDIAN MEDICAL SERVICE.

LECTURE I.

Delivered on Jan. 7th.

MR. PRESIDENT AND GENTLEMEN,—Before I enter upon a consideration of the etiology of endemic goitre, permit me to thank the College for the honour conferred in electing me to address you on this subject.

INTRODUCTION.

Having had the good fortune to reside for some ten years in a part of India where goitre and cretinism prevail with great intensity, and which is probably one of the purest regions of endemic goitre in the world, I have had exceptional opportunities for carrying out extensive observations and experiments not only on animals but on man also. Though my official duties as an officer of the Indian Medical Service have often compelled me to interrupt my researches, and the prejudices of the people in some of the more backward villages have not always been easy to overcome, I have been able, with the help of the civil and military officers, and the native chiefs and rajahs of the district, to carry to a successful issue many observations and experiments which I venture to think would not have been possible in any other part of the world. Especially am I grateful to those men who came forward in response to my request and offered themselves as subjects for experiment. They have performed a service to humanity of which there are parallel instances in the field of medical research, but none more commendable.

The tract of country where my researches have been mainly conducted comprises the districts of Chitral and Gilgit, and is situated at the extreme northern point of British India, in that part of the Western Himalayas known as the Hindu Khush. It lies between the parallel of latitude 35° and 37° and meridians of longitude 72° and 76°. The main valleys of this district, through which the Chitral and Gilgit rivers flow, are narrow, being rarely more than one mile broad at any part. They are bounded on either side by high hills ranging between 10,000 and 15,000 ft. The ranges bounding the valleys are intersected at intervals by narrow nullahs or valleys, each with its mountain stream derived mainly from the melting of the snows on the hills above. At the mouths of these nullahs alluvial fans stretch with a gentle slope towards the river. These alluvial formations, composed as they are of a porous soil, are the only habitable portions of this mountainous country; on them we find villages and a considerable amount of cultivation.

The climate is a temperate one, never excessively cold nor excessively hot, except for a few months of summer. Snow covers the ground in some parts during the winter months, usually up to the end of February. The rainfall is small.

In many parts of these valleys the hills are poorly wooded, and in consequence fuel is scarce. During the winter months the people live crowded in small stone-built huts, of which the only ventilation is a hole in the roof. The average cubic space per individual is 200 to 250 cubic feet. In summer the people live for the most part out of doors. The natives of this region are, as a rule, poor. Food is plentiful, comparatively speaking, from July to February, after which the people are often obliged to live on the poorest grains, dried fruits, and the greenstuffs of the spring. Their food is almost entirely vegetable. Flesh meat is an article of diet far beyond their means, while in Chitral especially salt is a luxury to all except the richest families.

But my observations have not been wholly confined to this region. During my periodic visits to Europe, and especially during the last year, I have employed myself in studying the disease as it prevails in the British Isles, Germany, Austria, Bavaria, Tyrol, and Switzerland. I have had an opportunity, through the courtesy of Dr. Eugene Bircher, of Aarau, and of Professor Kocher and Professor Kolle, and other members of the Swiss Goitre Commission, which is at present sitting, of acquainting myself with the conditions under which their experiments have been conducted and of examining their results. In consequence of this unusual experience of the disease, I am in a position to assure you that the endemic goitre of Europe is the same disease as the endemic goitre of Himalayan India.

Before proceeding to an account of my own work, which comprises the major part of these lectures, it will be necessary for me to go over ground with which most of you are doubtless familiar. I must, therefore, crave your indulgence during part of this lecture while I present to you facts which, though somewhat dull in their narration, are essential to my argument.

The problem of the causation of goitre is one which has exercised the minds of observers since the earliest days of medical history. There are, indeed, few diseases about which so much has been written and so many diverse views propounded. For a student of the subject, perhaps one of the most onerous tasks is the sifting of the enormous mass of evidence which has been brought forward by the supporters of these different theories. He finds early in his study that the greater part of the evidence is purely circumstantial, and that the literature of the subject consists, to a great extent, rather in records of impressions and opinions of observers than in scientifically proven facts. The separation of the wheat of fact from the chaff of fancy is consequently a matter of considerable difficulty.

My plan in these lectures is to bring to your notice both such facts and deductions from the literature of goitre as I believe to merit credence, and also the experimental and other observations I myself have made, as a result of which I am convinced that endemic goitre is due to a living excitant of disease.

THE DISTRIBUTION OF ENDEMIC GOITRE.

Endemic goitre is widely distributed over the whole world. Few countries appear to be entirely free from it. The disease is so common in certain parts of England and Scotland as to be distinguished by the names, "Derbyshire neck" and "Nithsdale neck"; but the extent to which it prevails in European countries generally and in the East is seldom appreciated.

Baillarger estimated that about the year 1874 there were in France alone no less than 500,000 goitrous individuals and 122,700 cretins and cretinous idiots. In Switzerland, during the six years between 1875 and 1881, 12,227 young men were exempted from military service on account of goitre. In Italy 3 per cent. of the conscripts were rejected for the same reason between the years 1859 and 1864. In the provinces of Piedmont, Lombardy, and Venice there were, in the year 1883, 128,730 goitrous and 12,882 cretinous individuals amongst a population of 9½ millions. In other words, one in every 67 of the inhabitants was either goitrous or a cretin. In some of the villages of that part of the Himalayas, where my own researches have been carried out, goitre is so common that it is difficult to find a man, woman, or child not suffering from the deformity. I estimate that not less than 20 per cent. of the total population of Gilgit suffer from goitre; and I found amongst a population of about 70,000 over 200 cretins. In European countries the proportion of cretins to goitrous individuals is still higher, so that when we consider the vast number of sufferers from goitre in Himalayan India and Europe alone—a number which cannot fall far short of 5,000,000—and that the disease is capable of giving rise in the children of these sufferers to the grossest forms of physical and mental degeneration, we are in a position to realise the immense amount of disability and race degeneration for which goitre is responsible, and to appreciate the necessity for its extermination.

Two main facts emerge from a study of the geographical distribution of goitre. The first is the very marked association of goitre with regions of high mountains; the second, the comparative limitation of the disease to temperate and sub-tropical zones.

The association of the endemic with mountainous regions is perhaps the most striking peculiarity of the disease. The Alps, the Pyrenees, the Himalayas, the Carpathians, the Caucasus, the Andes, the Cordilleras, the Ural and Altai Mountains, and in our own country the valleys of the Pennine range, the Cotswolds and the Mendips, are all noted haunts of goitre. But while it is true that the disease has its home in the mountain ranges of the world, it is not confined to them. St. Lager has assured us that it is met with far away from the hills, in the plains of Lombardy, of Piedmont, of Alsace; in the plains of the Danube, in Upper and Lower Austria; in the plains of the Lena and Obi in Russia; of the St. Lawrence in Canada; and in some of the oases of the desert of the Sahara. Macnamara records its occurrence in the plains of the Ganges and the Bramapoutra, and of the Chenab and Sutlej in India. St. Lager enumerates many other localities where the endemic is met with outside mountainous regions, but those I have quoted are sufficient exceptions to a very striking rule.

Some mountainous countries, on the other hand, are almost exempt from goitre, as, for example, certain parts of Norway, and in the Highlands of Scotland, where it appears to be almost unknown. The hilly nature of a country, therefore, cannot be regarded as a necessary factor for the development of goitre.

Goitre is found at all heights above sea-level where man can live and cultivate the ground. I have met with it at as great an altitude as 10,000 ft. On the other hand, it is not absent from the sea-coast, as is often erroneously stated. It occurs, for example, in the delta of the Ganges, on the coast near Manilla Bay, where Duncan has found, at Macabebe, as many as 20 per 1000 of the inhabitants are goitrous. It occurs in the island of Arran and on the coast of Ceylon. Berry has met with it amongst people who live and have always lived close to the shore of the Burry Estuary, in Glamorganshire. It occurs also in Algeria, on the shores of the Mediterranean Sea.

Our map also shows us that goitre is most prevalent in temperate and sub-tropical zones. It is found, however, in regions of great cold, as in parts of Siberia, in Finland, and in the Hudson Bay Territory of North America. It occurs also in regions of great heat, as in tropical South America, Borneo, Sumatra, Java, and India. While, therefore, temperate and sub-tropical climates are more favourable to its development, neither great heat nor great cold excludes its occurrence. In short, though the disease shows a marked preference for mountainous localities and prevails with the greatest intensity in the deep-cut, narrow valleys which intersect the mountain ranges of temperate and subtropical zones, it can and does prevail in all countries, flat or hilly, hot or cold, dark and dismal, or bright and sunny, where man dwells and cultivates the soil.

The association of endemic goitre with mountains has led to the promulgation of the most diverse views as to its causation. A causal influence has been attributed to configuration of the soil, to altitude, to the rarity of the atmosphere, to cold and dry air, to air holding too little oxygen, and to air holding too much, to the action of cold air on the neck, to air laden with sulphurous vapours, to a want of iodine in the air, to air charged with electricity, and many other such-like causes; the evidence, however, now before us is sufficient to demonstrate finally the error of all such hypotheses.

RACE, PREDISPOSITION, OCCUPATION, SOCIAL STATES.

All races suffer from goitre; there appears to be no such thing as race immunity to the disease. It is stated by Bauer that persons of a lymphatic temperament and those of a neuropathic constitution are especially prone to develop goitre.

There appears to be a family *predisposition* or *hereditary tendency* to the disease; the children of goitrous parents are more usually goitrous than those whose parents or grandparents are goitre-free. It is to be remembered, however, that this may be in part accounted for by a greater liability to infection on the part of those living in houses where the disease occurs.

Occupation plays a part of considerable importance in the development of the disease. Mackenzie, writing of an endemic centre of goitre in Lanarkshire in 1898, found that 98 per cent. of the cases occurred in the labouring and mining classes. In Gilgit and Chitral it is very noticeable that those whose occupation brings them into contact with the soil suffer to a much greater extent than those who employ themselves otherwise. It is comparatively rare to find goitre in the families of any of the ruling chiefs of the district or of their relatives; these by virtue of their birth do no agricultural work of any kind. The numerous clerks, shopkeepers, and merchants who come from various parts of India and reside with their wives and families for many years in Gilgit suffer to a much lesser extent than the indigenous inhabitants. The fact of the much greater incidence of the disease amongst cultivators of the soil and the labouring classes generally is one of considerable importance to the etiologist.

The hygienic conditions of life of all classes of the native population in Gilgit differ in no essential. Their houses are all insanitary, and are infested by the same biting insects. Their water-supply is the same, and they suffer to an equal extent from endemic diseases other than goitre. It is true that the labouring classes are poorer than other classes of the community and that their food is almost wholly vegetarian, but this difference in food-supply, though it may contribute to the result, cannot be considered sufficient to account for the greater prevalence of the disease amongst those who handle the soil. The difference is due to the greater liability to infection of the poorer and labouring classes generally.

BEHAVIOUR OF THE ENDEMIC.

The endemic of goitre prevails with different degrees of intensity, in different countries, and in different parts of the same country. In France, according to Baillarger, the endemicity reaches a very high degree in certain departments, especially those situated in mountainous tracts, whilst in others the endemicity is so slight that the disease appears to occur in the form of sporadic cases only. Similarly in England, goitre is well marked in certain counties, while others are comparatively free from it, and some are said to be wholly so.

It is highly probable, as has been stated by James Berry, that "most goitres may fairly be considered to belong to the endemic class, but the endemicity is so widely spread over the whole country, while at the same time it is so slight, that it easily escapes notice, and cases of goitre are often considered to be sporadic which should more correctly be classed as endemic." Thus, while the degree of endemicity varies, it would be difficult to declare any area to be wholly goitre-free.

In any locality in which goitre is well marked, as in the Alps and Himalayas, it will be found that the disease prevails with widely *different degrees of intensity in villages situated adjacent to one another.*

Moreover, in an endemic area *the disease may fluctuate.* It is subject to periods of increase and decline. Baillarger studied the variations of the endemic in 60 departments of France on the basis of figures afforded by the tables of recruiting for the years 1816–65. He divided these 50 years into periods of 10 years each, and in comparing the five periods he was able to arrive at the definite result that the endemic had increased in 26 departments, diminished in 17, and remained stationary in the remainder. The augmentation of the disease in the 26 departments was seldom uniformly progressive throughout the whole 50 years, but took place mostly during the last three or four decades. He also noted the increase of goitre in some departments which had previously been almost wholly spared. Fifteen of the 17 departments in which goitre was found to have diminished were amongst the most goitrous in the whole of France. In these the intensity of the endemic diminished by about one-third in the 50 years under review. I consider this investigation of Baillarger to be highly important, and that the results arrived at can most reasonably be explained on the assumption that goitre is due to a living excitant. Progress in hygienic conditions cannot provide a sufficient explanation; for whereas this was uniform throughout the departments, the disease fluctuated.

Similarly in parts of Gilgit the disease is believed to be much less common now than formerly, though the conditions of life of the people have not altered. My belief is that there is for each endemic centre of goitre a point of maximum intensity for that centre. Having attained to this point the disease tends to diminish owing possibly to the acquirement,

after a number of generations, of a certain degree of natural resistance to it. It was in 15 out of the 17 most goitrous departments of France that a diminution in the intensity of the epidemic took place, and not in those which were only moderately severely affected.

Goitre has made its appearance in many places where it was formerly unknown. Baillarger, writing in 1873, quotes the Ardennes and the Haute-Savoie, as departments of France, formerly almost free from the disease, which had become relatively highly affected. South America, especially Brazil, furnishes many instances of the spread of the disease. It will be interesting to find whether these are examples of the spread of the "parasitic thyroiditis" of Chagas rather than of true endemic goitre.

My own experience has provided one example of the appearance of goitre in a locality previously exempt. As this case is of considerable interest, I may be permitted to refer to it in some detail. Previous to the year 1893 goitre was unknown in the hill State of Nagar. The ruling chief of Nagar, his councillors, priests, and other reputable residents in the State, are most emphatic on this point. After the Hunza-Nagar campaign in 1893 the little State began to enjoy freer intercourse with the outside world. About the year 1898–99 four goitrous individuals came to reside in the village of Nagar, which is the capital of the State of the same name; of these, three were members of a priest's family. This family resided in a house which was close to the head of the spring supplying the village with drinking water. The fourth individual lived in a house in a different part of the village. About six years after these four subjects of goitre were stated to have arrived in Nagar, I examined the villagers for goitre. I found in the priest's family that there were seven goitrous individuals, three being the imported cases, and four children who had developed the disease in Nagar. The fourth imported case was that of a man whose family consisted of himself, his wife, his brother, and his son aged 2 years. Neither he nor his wife, brother, nor child had been outside Nagar since the date of his arrival six or seven years previously. This man's brother and son were both found to be goitrous; the child was stated to have developed the disease at the age of one year. He denied that his wife was goitrous. I was not permitted to examine her, owing to religious scruples.

Twelve other children in the village were goitrous. The children were from different houses scattered over the village. They were all under the age of 10 years, and none showed any signs of cretinism, myxœdema, or nervous disorders. There were, therefore, in the village 23 cases of goitre, of whom 5 were imported cases and 18 had developed in the village itself. Of these 18 cases all were in young people, 17 being in children under 16 years; the youngest case was in a child of 2 years of age. All these 18 cases came from a part of the village which was supplied by the spring at the head of which the priest and his goitrous family lived.

Two years subsequently I made a further examination of the people of this village. It was impossible on this occasion, however, to see the whole population, as harvesting was in progress. Amongst about two-thirds of the male and child population I found 23 cases of goitre; of these, 10 were old cases—that is to say, they had been taken count of in my first examination, while 13 were new cases. Of these 13 cases, 11 were in children, of whom 7 were boys and 4 girls. The remaining two cases were in adults. All the goitres were small uniform enlargements, and there was no evidence that the children were in the slightest degree inconvenienced by the swelling, or that it was accompanied with other symptoms. It is important to note that none of the children had developed myxœdema or showed signs of nervous disorders.

The second examination confirmed the finding of the first with respect to the much greater incidence of the disease in children than in adults. It was found from a study of the distribution of the cases over the village that they were scattered here and there amongst the houses. There appeared to be no definite line of spread of the malady, nor were all children in the same house always affected. It was found also that cases occurred almost entirely amongst those who lived all the year round in the village and who did not go out and live in the fields during the hot months of the year, as is the custom amongst a certain class of the villagers. It will be noticed that the disease spread very slowly, only 31 new cases amongst the male and child population having arisen in seven or eight years out of a population of approximately 1500.

Here we have an example of the slow and steady spread of goitre amongst susceptible individuals as a result apparently of the importation of cases of the disease into a locality formerly free from it. The difficulty in the case is that we are compelled to rely on the statement of the elders of the village that the disease was formerly unknown, and that its appearance coincided with the importation of cases of goitre from without. Personally, I regard their evidence as sufficient. However this may be, there is no doubt but that the disease is increasing in Nagar, and that this increase is chiefly among the children. Whether goitre is spread by soil, water, biting insects or other means, it is impossible to explain such a case as this on any other hypothesis than that which attributes the disease to a living excitant.

The endemic of goitre may disappear almost entirely from a place, and only persist in isolated cases. This is usually attributed to changes in the water-supply. We shall subsequently see with what reason. In such localities, however, "sporadic" cases are not uncommonly met with, and actual "epidemics" may occur. The goitrigenous agent clings to certain places in a way which is very remarkable, so that a locality may be goitrous though the endemic may have ceased to be a notable feature of the district.

The endemic prevails especially in rural districts. Although goitre may be comparatively common in many towns, as, for example, in Innsbruck, Vienna, Bern, and Bayreuth, it is never found to prevail to such an extent as in country districts.

In concluding our consideration of the behaviour of the endemic, I would emphasise the fact that a correct criterion of the endemicity of goitre cannot be obtained by a mere reference to the numerical ratio of thyroid enlargements, but regard must also be had to the virulence of the disease as manifested by the presence of cretinism, deaf-mutism, and its other sequelæ. A proper index, therefore, will include: (1) The number of cretinous children, deaf mutes, and idiots; (2) the number of susceptible newcomers who acquire the disease within a fixed time; (3) the proportion of men and women affected; and (4) the size and character of individual goitres. In regions where the endemicity of the disease is not high the thyroid swelling is, as a general rule, correspondingly small, and although considerable numbers of the inhabitants may have enlarged thyroids, the large degenerated goitres are comparatively rare or wholly absent. This is very noticeably the case in certain villages of the Gilgit district and in Switzerland and parts of Bavaria.

Cretinism, on the other hand, is usually met with in villages where the endemicity is high; in such villages the women suffer from large degenerated goitres and the hygienic conditions of life of the people are bad.

SEASONAL PREVALENCE OF GOITRE.

The disease exhibits a distinct seasonal prevalence. In Gilgit and Chitral new cases of goitre arise and enlargements of pre-existing goitres take place during the spring and autumn months, that is to say, during the months of moderate heat. I have never known a case of goitre arise during the winter months when the atmospheric temperature sinks to freezing point, while there is a tendency for existing goitres to diminish. Nor do new cases of the disease arise during the hot months of the year from June to September, when the temperature rises as high as 108° to 110° F. in the shade.

In the whole of Himalayan India where goitre is met with, "it is during and after the rains that the disease most commonly begins and most rapidly develops" (Macnamara). It is at this time, when the water-supplies become flooded with the washings from cultivated fields and when the people are usually attacked by other endemic diseases, that the goitrigenous influences find the conditions most favourable for their action. These observations correspond with the results of recent experiments on rats, as published by E. Bircher, who appears to have convinced himself that water is more potent to produce goitre during the summer months, the potency being lost during the winter time—the temperature of the summer months of Switzerland corresponds to that of the spring and autumn of the Himalayas. Hence it is that in non-tropical countries the use of such terms as "summer goitre" or "goitre aigu" have become

frequent, and many examples of these so-called "epidemics" of goitre are to be met with in the literature.

EPIDEMIC GOITRE.

The most striking feature of these epidemics is that they occur only in endemic centres, in the neighbourhood of such centres or in localities where the disease has previously been prevalent. An interesting example was brought to my notice some years ago by Colonel A. J. Macnab, I.M.S. The epidemic occurred amongst the boys of the Bishop Cotton School at Simla. Goitre was known to have prevailed formerly in the school buildings, but no cases had been observed among the scholars for many years. The epidemic appeared suddenly, attacked a considerable number of the boys, and even some of the masters, without any change having been made in the water-supply and without any appearance of goitre amongst the other residents of Simla, who used the same pipe-supply. The goitres were small uniform enlargements and were accompanied with no symptoms. They responded readily to treatment or disappeared spontaneously during the vacation when the boys went to their homes.

This is a difficult case to account for. The water-supply could not have been the source of infection, nor is it known by what agency it could have been conveyed; all that can be deduced is that the immediate cause of the epidemic was most probably a living organism.

It is also remarkable that young people are more liable than old to these outbreaks. On a fresh arrival of troops in Gilgit, for example, I have noticed that it is the young soldiers who first develop the malady. In regions of higher endemicity older men might suffer also, but not to the same extent as those who are younger. Many similar instances have been recorded among school children, and it is possible that a contributing cause is to be found in the fact that both troops and school children not uncommonly are housed in buildings in which the air space is inadequate. Under such circumstances the thyroid gland, which is intimately concerned with the regulation of the gaseous exchanges of the body, may be abnormally taxed, and the addition of goitrous influences may by making a further demand on its functional activity result in some cases in its visible enlargement. The collected instances of "epidemics of goitre" confirm the statement which I have already made, that the disease shows a marked tendency to occur within certain definite seasons.

All this amounts to little more than that susceptible newcomers to a goitrous locality, especially if they are living under non-hygienic conditions, are very prone to develop goitre; there is no essential difference between epidemic and endemic goitre.

You are possibly familiar with accounts of the epidemic of goitre which appeared in mid-ocean among the followers of Captain Cook in the year 1772. Having run short of fresh water, the crew collected ice from the bergs among which they were then cruising. The ice was melted in iron pots, and in consequence apparently of drinking the resultant water a number of the crew became goitrous. It is stated by Forster, the ship's surgeon, that the disease did not affect those who refrained from drinking this water. Assuming the authenticity of this account and that the melted ice-water was the vehicle for the excitant of the disease, this outbreak indicates only that the excitant is resistant to great cold—a fact already made clear to us by the geographical distribution of the disease.

COURSE OF THE DISEASE.

It is my experience that goitre generally develops in susceptible individuals in a period varying from six weeks to three months after their arrival in a goitrous locality. Cases have been recorded by Baillarger, St. Lager, Macnamara, and others, in which the swelling made its appearance after an exposure to goitrigenous influences for periods varying from eight days to one month only, and I myself have seen parallel cases, but believe them to be exceptional.

The goitre, which is soft in consistency, is, as a rule, a uniform enlargement, though occasionally one or other lobe may be the more prominent. In the latter event the more prominent lobe is usually the right. There is not infrequently considerable pulsation in the vessels of the neck. The swelling does not, as a rule, progress in size in a uniform manner, but fluctuates considerably from time to time. Very occasionally the gland may return to its normal size without treatment of any kind. The enlargement after it has attained to a certain point usually subsides to a size at which it remains stationary. Incipient goitres almost invariably disappear spontaneously when the patient leaves the goitrous locality, and I have noticed that they may occasionally do so also from such slight alterations in residence and water-supply as is entailed by a transference of the sufferers from the barracks to the regimental hospital. This is a point which it is necessary to bear in mind in gauging the value of treatment. Swellings at this stage are rarely large.

Such a train of events is what may be called a "first attack" of goitre. The tendency is for the gland to revert to a condition approaching as nearly to normal as is possible. In some few cases the reversion may be complete, but in the great majority the "attack" leaves the thyroid larger than it found it. With succeeding springs and autumns, however, recurring attacks of thyroid hyperplasia occur and the gland increases in size by a step-like process which was also described by Lawson Tait in the case of goitre associated with pregnancy. The process is comparable to that which takes place in the spleen, as a result of successive attacks of malaria. If the patient is subjected to goitrous influences for any length of time degenerative processes soon make their appearance and the large cystic and adenomatous goitres which are so common in goitrous localities are the result, while symptoms of slight hypothyroidea are almost constantly present in such cases. Should the subjection to goitrous influences be intermittent the onset of degenerative processes is much longer delayed, and these changes are much less marked than in the case of the indigenous inhabitants.

Men who have suffered from goitre in Gilgit often lose all trace of the swelling within as short a time as one month after their departure from the district. But such men on their return invariably suffer again. Ultimately small cysts or adenomata make their appearance in the gland and these are unaltered by a change of residence. The importance of this feature of the malady cannot be over-estimated. It emphasises the markedly place character of the disease and the fact that continued subjection to goitrous influences is necessary to keep the thyroid in a state of enlargement and to produce changes in the gland of a permanent character. It seems clear that the goitre-producing substance resembles in its action that of a poison, which gives rise to the more marked results the longer it is administered and the stronger the dose.

GOITRE IN ANIMALS.

It is commonly believed that in all endemic localities, not only man but animals also suffer from goitre. The disease is said to be most frequently observed in mules, horses, and dogs. Goitrous localities, however, appear to differ very considerably in this respect. I on one occasion examined all the dogs in a village where 45 per cent. of the male population were goitrous without coming across a single animal which showed enlargement of the thyroid gland.

Marine, in his study of the disease in dogs in Cleveland, has found that 90 per cent. of these animals show some degree of hyperplasia of the gland, and in some cases actual colloid goitre. He regards the hyperplasia as a certain indication of goitrous influences. By this test he also found 90 per cent. of sheep and a lesser number of cattle affected. This observer has also brought into prominence the most important fact of the occurrence of goitre in fish, in endemic localities, and tells us that carnivorous fish only are affected. Under natural conditions the disease affects pike, for example, but not carp. Trout, bred under artificial conditions, are peculiarly liable to the malady. Gaylord also has shown that in certain ponds some of the fish are severely affected, while others of the same species are immune.

Epidemics of goitre amongst horses and dogs have been described by Adam. Horses housed in certain stables acquired goitre, whilst others stabled elsewhere escaped the disease. He records also that only a certain percentage of dogs acquired goitre, whilst others living under similar conditions were not affected. Marine has also found that well-cared-for dogs show a greatly lessened percentage of glandular hyperplasias. The greater incidence of the disease amongst the poor would appear to apply, then, as much to dogs as it does to man.

The conclusion is that goitre which can be recognised by inspection and palpation is not so commonly met with in animals as is generally believed. It therefore follows that in experimenting upon these animals a greater power of resistance is to be anticipated than exists in man.

SEX INCIDENCE OF GOITRE.

Goitre is more common in females than in males. The proportion of the two sexes affected is, however, a very variable one, and differs widely in different endemic centres of the disease. This variability of the sex incidence depends in great part on the degree of intensity of the endemic, the proportion of men to women affected being markedly less in those villages in which the endemicity is low. I have met with a village in which the only sufferers were women, and St. Lager also comments on this limitation of the disease to women in regions of low endemicity.

In France, in the year 1873, the approximate proportion of men to women affected was 2 to 5, a figure which represents fairly accurately the proportion for the Western Himalayas at the present day. In villages where the endemicity of the disease is very high the proportion between the sexes approaches 1 to 1. In one village of Chitral I found 79 cases of goitre amongst 139 females of all ages, and 77 cases amongst 136 males of all ages. In the chart which I now show the percentage number of male and female sufferers from goitre in the village of Awi, in Chitral, where the endemicity of the disease is very high, is shown at different age periods; the chart shows that both sexes are more or less equally affected. (Fig. 1.)

FIG. 1.

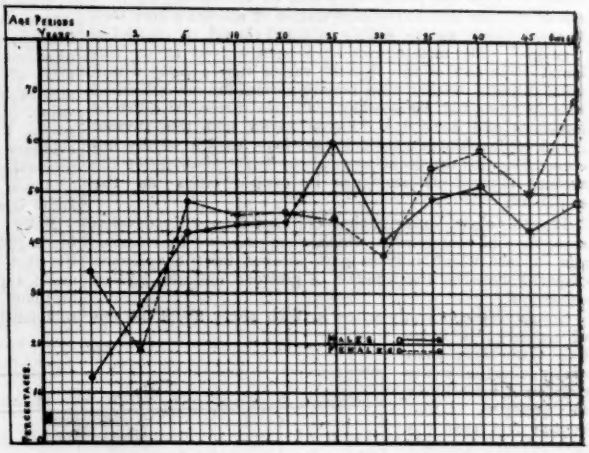


Chart showing percentages suffering from goitre at different age periods in the village of Awi, in Chitral. Total population examined, 426; children under 15, 269; adults, 157.

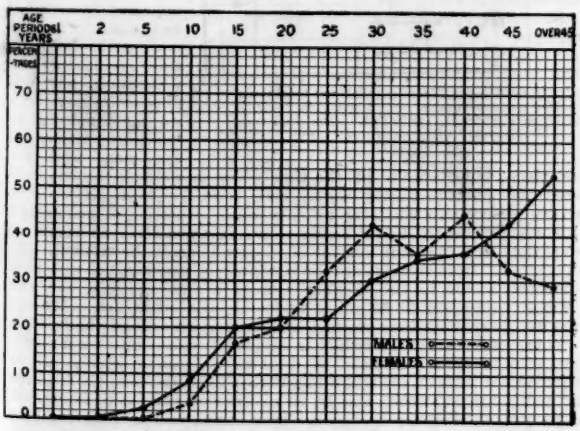
AGE INCIDENCE OF GOITRE.

Endemic goitre is considerably commoner amongst children than is generally supposed. The enlargement of the gland in children is usually small, and it is for this reason frequently overlooked.

In considering the question of the susceptibility of children to goitre, a distinction has to be made between children introduced into a goitrous locality, or subjected to goitrous influences for the first time, and those who have been born in an endemic centre of the disease. In the former case children are more susceptible to the disease than adults. The spread of goitre in the village of Nagar, to which I have already referred, is a striking illustration of this fact. Amongst children born in goitrous localities the numbers affected with goitre appear to vary greatly in different villages. I have found in two or three villages of Chitral that the number of young children affected was very high, and that even breast-fed children were goitrous in some cases. In contradistinction to these villages, I have found goitre to be rare amongst the infants of the villages of Gilgit, and to be practically never met with before the second year of life. (Fig. 2.) It is possible that this marked difference may to some extent be accounted for by the gradual acquirement of a natural resistance to the disease in the children of villages where the endemic has prevailed for centuries—a resistance which may be sufficient to protect them until the critical period of puberty is reached.

The occurrence of goitre in breast-fed children is perhaps the most interesting point connected with the age incidence of the disease. I have met with goitre in infants only in villages where the endemicity of the disease was high and the individual goitres amongst the mothers of the infants particularly large and degenerated. The disease is as a rule in these cases congenital. There is experimental evidence to show that the offspring of partially thyroidectomised bitches are born with thyroids as much as 20 times larger than normal. The large degenerated goitres of some women, which are functionally less perfect than the normal gland, put them in a position which is comparable to the partially thyroidectomised bitches of the experiments. Animals operated upon in this way have been noted to suffer from tetany prior to whelping, a circumstance which points to the inadequacy of the thyroid mechanism. The mothers of cretins and of children born with congenital goitre also very commonly suffer from tetany in Gilgit and Chitral during pregnancy. In these women, then, there is also a considerable degree of thyroid insufficiency, and their children may as a consequence be born with thyroid glands larger than normal. Now, while it is probable that the great majority of all cases of goitre in infants can be accounted for in this way, we must, till the causal agent of endemic goitre has been discovered, recognise the possibility that the disease may be capable of spread by means to which breast-fed infants are as much exposed as the adult.

FIG. 2.



Endemic goitre in Gilgit. Chart showing percentages suffering at different age periods. Total population examined, 1533; children under 15, males 375, females 330; adults, males 447, females 381.

Comparatively prevalent as goitre is among children, my own observations lead me to believe that it is not so common as Professor Kocher's school would have us think. Professor Kocher and Dr. Vannod, of the Swiss Goitre Commission, have kindly furnished me with some recent statistics which show that in Lauterbrünnen, Sumiswald, and Wassen 59 to 87 per cent. of children between the ages of 8 and 15 years are goitrous. In other parts of Switzerland also they have obtained similar results.

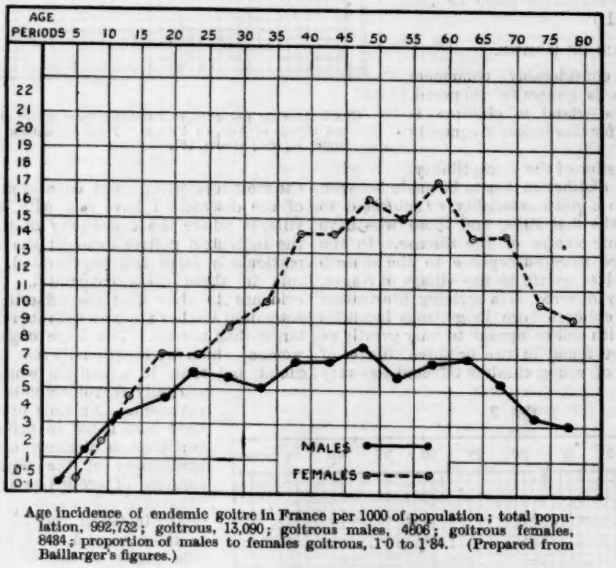
On the other hand, Bircher, a contemporary Swiss observer, regards Kocher's figures as misleading, since he has not been able to find that the disease is so excessively common amongst the young men who present themselves for military service. Commenting on Kocher's figures, Bircher has said: "It

appears absolutely impossible that such an endemic should appear amongst school children, whilst amongst the guards on duty, who were but a little older, the endemic must already have become so slight." It is clear that statistics of this nature will depend entirely on what the observer regards as a goitre. If all cases are included as "goitre" in which the gland is only palpable, but where it may not be visibly enlarged, then the percentages will be excessively high. I am of opinion that in the compilation of statistics only such thyroid glands as are visibly enlarged should be classed as "goitre." My own figures have been arrived at on this basis. The size of the thyroid varies very greatly within normal limits, so that what may be normal for one individual may be abnormal for another. It also varies for different localities and countries. Bayon found that the thyroid gland of Londoners who had died from causes wholly unconnected with the organ were about half the weight of the normal thyroid of residents in certain cities on the continent.

It seems clear, however, that children frequently develop some thyroid enlargement which disappears with increasing age—a fact which may in part account for the apparent disparity between the number of goitrous children and of conscripts.

Goitre very commonly arises in both sexes about the age of puberty; it is at this time more than at any other that young people are most likely to develop it. I find in the fact that the thyroid gland is largely concerned with the functional development of the generative system an explanation of the greater susceptibility of young people to goitre at this period. The thyroid gland at puberty is called upon to exercise to the fullest degree its functional activity, as it is also during the state of pregnancy. The added strain of goitrous influences may tax the gland's resources to a degree which will necessitate hypertrophy during these states. Indeed, without the added factor of endemic goitrous influences swelling of the thyroid is apt to occur at puberty and during pregnancy.

FIG. 3.



Age incidence of endemic goitre in France per 1000 of population; total population, 992,732; goitrous, 13,090; goitrous males, 4606; goitrous females, 8484; proportion of males to females goitrous, 1·0 to 1·84. (Prepared from Baillarger's figures.)

"The relationship which has been known from time immemorial to exist between the sexual organs and the thyroid in man and other animals, and has hitherto been a mystery without any explanation, may possibly be the last reminiscence of a time when the thyroid glands were the uterine glands of the palæostracan ancestor" (Gaskell).

With increasing age the susceptibility to goitre diminishes in the case of men, but increases in the case of women during the child-bearing period of life. These facts are well brought out in the chart which I now show (Fig. 3). It has been constructed from the figures given by Baillarger, and takes count of over 13,000 cases of goitre. Baillarger considered that in the case of children only the more evident goitres were noted in the documents from which he obtained his figures, and that a very large number of incipient goitres were not recorded. Certainly many more children suffer from goitre than would appear from Baillarger's figures.

From the chart it is seen: (1) that goitre is rare in the early years of life; (2) that there is no great disproportion between the number of cases in the two sexes up to the age of 20 years; (3) that the proportion of cases of goitre in the population below the age of 20 years is about half that in the population above this age; (4) after the age of 20 there is a great increase in the number of women sufferers, and the proportion of men to women affected becomes 1 to 2·4. This fact makes clear the influence of the child-bearing period of life on the development of the malady.

THE INFLUENCE OF WATER.

From the earliest times popular belief has attributed to water the causation of goitre. At the present day there are few who doubt the truth of this belief which is regarded as an established fact. It is true that there is an enormous mass of evidence in favour of it, but the evidence is not always infallible, and is, indeed, often of little scientific value. "All the world says such and such a water causes goitre, therefore it must be so" is the gist of much of the evidence on which the belief in the goitre-producing properties of water is based. We will now examine the evidence and determine for ourselves whether or not the belief is well founded.

Many authors, especially Billiet, Grange, Chabrand, St. Lager, Collin, and more recently Graf, have referred to the fact that men wishing to escape military service have made a practice of drinking the water of certain "Kropfbrunnen," with a view to the production of a goitre sufficiently large to secure their exemption. Dr. Graf, speaking on the subject of the etiology of goitre, at Vienna, in January, 1912, said that "in some places the recruits were in the habit of drinking the water from certain springs, with the result that after about four weeks of the practice they showed a marked hypertrophy of the thyroid gland which caused their rejection by the recruiting authorities of the army. When the manœuvre was successful they drank the same water for a second period of four weeks, taking the precaution to boil it previously, and the goitre disappeared as readily as it came." In estimating the value of this evidence and without in any way impeaching its veracity we must not fail to remember, firstly, that the men were not under control at the time when they drank the supposed goitre-producing water, and, secondly, that we have no evidence whatever to show what proportion of malingerers succeeded in producing goitre in themselves as compared with the total number of those who made the attempt.

More valuable are the instances of communities who have access to two distinct sources of water-supply, the one supposed to be goitre-producing, the other not. My own experience has provided one striking example of the freedom from the disease which is enjoyed by communities as a result, to all appearances, of drinking a peculiar water. Eight villages of the Gilgit Fan derive their water-supply from the Kirgah stream, and in all of them goitre is to be found. A ninth village is supplied by a spring issuing from amongst granite rocks and of exceptional purity, chemically and bacteriologically. All those who drink exclusively from the water of this spring before it has become contaminated by passage over the soil are exempt from goitre. Not only does the water not cause goitre, but it is popularly believed to have a curative action, and sufferers from goitre are known to resort to it for this reason. Some support is lent to this belief by the fact that women who have suffered from goitre frequently lose the swelling after marrying men of this

village and coming to reside permanently in it. Such cases of goitre as I saw there amongst women were imported cases, and were of such a nature, cystic, adenomatous, and the like, that change of residence was not likely to result in their disappearance. The curative action of some waters is referred to by St. Lager and also by Macnamara.

There are many authentic instances where individuals or communities have remained free from goitre while resident in a goitrous locality, as a result, apparently, of drinking rain or cistern water, or of boiling the water before use. Kocher has recorded that he found the children of innkeepers, who drink wine only, exempt from the disease, while other children suffered severely.

Perhaps the most important evidence of the influence of water in producing goitre is that afforded by the effect on the endemic of changes which have been made in the sources of water-supplies to affected communities. Goitre has been known to make its appearance in a town or village as a result of the introduction of a new water-supply. The increase of goitre in Vienna, which was observed about the year 1885, has been attributed by Billroth, Graf, and others to the introduction in 1870 of a new water-supply from Kaiserbrunn, in Styria, where goitre is endemic. In other cases goitre has disappeared after the sinking of new wells on the spot where the disease has been endemic, and Ewald gives many examples of such cases.

The notable improvement in the condition of the people of Bozel in Tarentaise, following on the introduction of a new water-supply is much quoted, and with reason, since the observations with regard to this place have been so carefully made and so accurately recorded. In the year 1848 the Sardinian Commission estimated that there were in this village, amongst a population of 1472, no less than 900 goitrous individuals and 109 cretins. At that time a pipe water-supply was introduced from the neighbouring village of St. Bon, a distance of only 800 metres. The condition of life of the people of the two villages was in all respects identical, with the single exception of the water-supply, yet in Bozel the endemic prevailed with the greatest intensity, while St. Bon was free from it. After the introduction of the St. Bon water into Bozel "no more cretins were born amongst the families who used the new water-supply exclusively." St. Lager narrates that in the main village he has seen goitres only among some old men, and adds the remarkable fact "that these tumours continue to develop amongst those who live in the hamlets where they are forced to use the old water; it is there only that new cases of cretinism arise." In the year 1864, or 16 years after the introduction of the new water-supply, Bozel was visited by the Lombardy Commission, when only 39 goitrous individuals and 58 cretins were found in the village.

A similar improvement has been noticeable all over England and Wales within recent years, and Ewald mentions that the beneficial result of improvement in water-supplies has been observed in Geneva, Villidmé, Rheims, and many other places. The Swiss National Commission for the study of goitre has instituted extensive inquiries with regard to this point. The opinion of the vast majority of Swiss medical men practising in goitrous districts is almost unanimous in attributing the notable decrease in the prevalence of the disease to the introduction of new and well-protected water-supplies, and to the improved hygienic conditions of life of the people.

Such a mass of evidence as this appears to afford conclusive proof that certain waters contain some substance which is capable of giving rise to thyroid enlargements. In the main it is of very great weight, though being indirect in character it cannot be said to be conclusive. Many of the facts considered apart are not wholly free from objection. The statement that the water of "goitre-wells" has caused goitre in those wishing to escape military service is a statement only, and is not supported by controlled observations. The freedom from the disease enjoyed by those who have made a practice of drinking certain waters may be a circumstance capable of explanation in other ways than that which attributes the disease to water. Cases are on record where goitre has been shown not to have any connexion with the water-supply. While it is true that persons who have used boiled water, rain or distilled water have escaped the disease, there are equally authentic cases where like precautions have failed to protect others. Considerable improvement in the condition of sufferers from goitre has been asserted to take place, and even cretinism to diminish or completely disappear where the water-supply has not been changed. The commune of Saint-Avre, in Savoie, is an example of such a case. Fortunately within the last few years evidence of a more direct character has been forthcoming, which demonstrates that water is undoubtedly associated with the development of goitre.

The observations of Marine and Lenhart with regard to goitre in fish, under natural conditions, is of great importance in this connexion. These observers have also studied the disease as it occurs in artificially bred trout. I shall have occasion to refer to their work in some detail in my next lecture, but here I may say that it leaves no room for doubt but that water is not without influence in the production of goitre.

THE INFLUENCE OF WATER AS SHOWN BY EXPERIMENT.

Many observers have endeavoured to provide experimental proof of the goitre-producing properties of certain waters. The first attempt in this direction was that of Hacquet, who in 1782, according to St. Lager, drank the water of a goitre-producing well, and "lived convinced of its action on the thyroid gland."

Bircher, about 1880, experimented on young dogs with the water of Kropfbrunnen, and also with the sediment therefrom, but with negative results.

Lustig and Carle carried out experiments on a horse and several dogs in Turin. One horse and one dog drinking the natural water developed goitre, while ten dogs given the same water *boiled* and *filtered* remained goitre-free. In 1903 I carried out similar experiments on dogs in certain villages of Chitral. Five of these animals drank the natural water of the particular village in which the experiment was conducted, while five others had the same water *boiled*. One dog drinking the untreated water of Awi showed a swelling of the thyroid gland. No change was observed in the animals drinking the boiled water. In 1905 I carried out a more extensive series of experiments on dogs in Gilgit. Some were given the natural water, some the same water *boiled*, and some the same water *filtered*. The results were wholly negative. These animals were not killed, however, so that early changes in the gland which might have been detected by microscopical examination may have escaped observation. In the spring of 1907 I gave six selected young men the residue separated by filtration from the very muddy water of Kashrote. Two of these developed goitre, while four remained goitre-free. In the autumn of 1907 I produced an obvious goitre in myself by drinking the Kashrote water residue.

E. Bircher, in 1908, experimented on apes, dogs, and rats, in Basle, giving them the water from the so-called goitrous springs in Rupperswyl. In apes no perceptible results were obtained. In dogs the results were positive, but as these animals suffer very frequently from goitre in the neighbourhood of Basle (*vide* Wilms), these results were scarcely decisive. Rats after some months showed manifest hyperplasia of the thyroid gland in the sense of a true formation of goitre. Bircher in 1909–10 repeated his experiments at Aarau, and showed that "it was possible to produce the formation of goitre in animals from water derived from goitrous springs, even when it has been conveyed to a distance." Experimenting on rats he succeeded in producing goitre both by the natural water and also by the filtered water of the goitrigenous springs. He also experimented by giving rats the residue of supposed goitre-producing water remaining on the candle of a Berkefeld filter after filtration. For the first six months no result was observed, but on continuing the experiment for 12, 15, and 18 months a considerable development of goitre resulted.

Wilms has also produced goitre in rats in the same way as Bircher, and has satisfied himself "that water filtered through a Berkefeld filter produced goitre in rats just the same as that which was not filtered." He has also concluded, as a result of his experiment on white rats, that "at upwards of a temperature of 70° C. the noxious substance is destroyed."

Répin (1910–11) has produced goitre in rats by giving them the water from a notoriously goitrous locality in the neighbourhood of St. Jean de Maurienne. Not

only was the disease produced in the locality itself, but also in Paris, to which place the water had been sent every other day from the goitrous district. In contradistinction to Wilms he was not able to render the water innocuous by a temperature of 99° to 100° C. for several minutes. In Répin's paper, in which he details the results of these experiments, he states that the water was "boiled for several minutes." He tells me, however, that this statement is not quite exact, as the water was not boiled but was placed in a flask and immersed in boiling water and thereby "raised to a temperature of 99° to 100° C. for several minutes." The photograph (Fig. 13)[1] represents the changes which Répin brought about in the size of the thyroid gland of rats as a result of giving them goitrigenous water for a period of nine months. The first line shows the thyroid apparatus of normal rats as seen from behind; the second, the experimentally produced goitres; whilst the third line shows the enlargement which resulted from the consumption of water "raised to a temperature of 99° to 100° C. for several minutes." He reports that "all animals which consumed the untreated water developed a thyroid hypertrophy of such dimensions that the total volume of the enlarged organ was at least ten times that of the normal gland; the lobes were embossed, hard, and of a very bright colour. The parathyroids were equally enlarged in volume." In the case of the animals which consumed the water that had been raised to a temperature of 99° to 100° C. he records that "the goitre is still very manifest, but much less voluminous than that of the animals which had untreated waters."

The Swiss Goitre Commission, appointed, I believe, in 1909, has carried out very extensive experiments with a view to the artificial production of goitre in animals. Large numbers of rats, dogs, rabbits, guinea-pigs, and monkeys have been employed. The Commission made use of the water of Rupperswyl, as did Bircher. Dr. Vannod and Dr. de Mestral, referring to the results observed in rats, report as follows: "Not only have we never demonstrated any hypertrophy of the thyroid, but the animals which drank the water of Rupperswyl for the longest time—seven and a half months—were found to have thyroids smaller than the control animals. Microscopical examination showed no trace of proliferation of epithelium." They also report that of the 28 dogs experimented on by the Commission, "the only one which showed an enlargement of the thyroid amounting to a pronounced goitre was a very young dog, drinking the water of Sumiswald Well." And with regard to the six monkeys employed they state: "The weight of the thyroid of the control monkeys varied between 0·15 and 0·25 grm., while the weight of the thyroid of the monkeys of the experiments varied between 0·35 grm. (St. Imer water) and 0·22 grm. (Lauterbrunnen water). They conclude that these waters had no action on the thyroid gland of monkeys.

Since the date of the report from which I have quoted the Commission have been successful in producing the disease in rats by feeding these animals with the natural water of Sumiswald and Lauterbrunnen. While in Bern, in the spring of 1912, and again in the autumn of the same year, Professor Kolle was good enough to show me some of these enlarged glands, and also some which had been produced by E. Bircher. The enlargements produced by Bircher were more marked and were considerably darker in colour than those produced by the Commission.

Experiments on animals have also been carried out by Grassi and Manaron (1903–04) and by von Wagner and Schlagenhaufer (1910) with results which varied considerably. The former observers concluded that the excitant of goitre can be conveyed to man in various media, of which water is in all probability one.

While many points with regard to these experiments remain to be discussed, we may at this stage of our inquiry accept as certain at least that (1) with the possible exception of rats, animals do not readily acquire the disease under experimental conditions; and that (2) *water is capable of conveying in some manner*, as yet incompletely determined, *the toxic agent of endemic goitre*. In my next lecture I shall deal with the nature of the toxic agent and endeavour to indicate the source from which it is derived.

[1] This figure will be printed together with others as a separate plate.

A Clinical Lecture
ON
MYXŒDEMA.

Delivered at Guy's Hospital on Nov. 20th, 1912,

BY W. HALE WHITE, M.D. LOND., M.D. DUB., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO THE HOSPITAL.

GENTLEMEN,—As you know, we propose this afternoon going over some points in connexion with myxœdema, and we do that because we have lately had some examples of the disease in my wards.

NOTES OF CASES.

The first case is that of a woman who was admitted to hospital under my care on Feb. 7th, 1912. She was 54 years of age, and on admission she told us that up to four years ago she was quite well. She then began to complain of weakness in the limbs and a feeling of coldness. She would sit over the fire, but she never perspired. This condition continued for some time, occasionally becoming worse, but never severe enough to confine her to bed. She had gained in weight during the last four years. Her medical attendant said he thought she had acute nephritis. A day or two before she came in she was worse in her general health; she was more apathetic and drowsy. When she was admitted it was observed that she was a big woman, with a heavy, bloated, yellowish-white, round face, which was absolutely expressionless, or, rather, which had the expression of blank idiocy. She was hopelessly unintelligent, could not answer the simplest questions, and did not know her own name. She was not deaf, for on being repeatedly asked to put out her tongue she would do so very slowly, but when it was once out she would leave it so. Her face was broad and heavy, and there was a flush over the malar bones. The eyelids were very puffy and almost closed up the eyes. The skin pitted only very slightly with prolonged firm pressure. The case did not look like one of ordinary œdema. The skin was very smooth, dry, waxy-looking, and desquamating. The hair was black, thin, and dry, the eyebrows were scanty, the tongue was broad and flabby, and the neck large and fat. The thyroid gland could not be felt. The legs were not swollen; they were thick like the face. The hands were large and the fingers coarse. She did not live long enough for us to photograph her. (To compare with the case just detailed I pass round a photograph of a woman who was under my care in the hospital previously with the same disease, and the photograph shows—I am sure you will agree with me—what I have described to you as the characteristics of the case which we are now considering.) A diagnosis was made of myxœdema. The pulse was 60 and the temperature only 95° F. The patient died within 48 hours, and we made a post-mortem examination. She died probably from a very slight patch of pneumonia. I show you her larynx, which you should look at carefully, for people do not often nowadays die with myxœdema. You will see that the diagnosis was correct, for the thyroid gland is atrophied and presents little more than so much fibrous tissue. Here under the microscope, if you will look afterwards, you will see that the thyroid is atrophied, for there is hardly any glandular structure left at all.

The next case I want to take is that of a woman now in the hospital, aged 53. Her previous history is unimportant, excepting in so far as we discovered it from her when she came in. When admitted her temperature was normal; a little while afterwards it was 97·2°F., and it has been low for most of the time. She looks as if she had œdema all over her. Here are photographs of her which somebody was good enough to leave in the lodge for me without saying who he was, and so I have not had an opportunity of thanking him personally. Here also are other photographs of her hands and face, and Mr. R. W. Cushing has kindly photographed her as well. I will pass round all these photographs of her and some of other sufferers from myxœdema, for we have plenty of pictures

to-day of people with this disease. To continue the description, the patient looks as if she had œdema all over her. The swelling does not, however, pit on pressure. The skin is dry; she feels the cold more than she did. The lips are a little thick, and there is a reddish hue over the malar bones. The hair is fine and scanty. There is slight sluggishness in the patient's movements. Speech is somewhat slow, and while speaking the voice gradually dies away. She is not normally intelligent, questions having to be sometimes explained to her before she appears to comprehend them. Her memory is slightly affected, especially for people's names. She seems suspicious of what is going to happen to her. She has had slight headache. Her gait is heavy and slow. She says she has been slow and doddering in her walk lately. We cannot feel the thyroid gland. She has peripheral retraction of her fields of vision. This perimeter chart shows you that fact. I will throw on the screen a photograph of her. It is a very good and typical picture of a woman with myxœdema. You will notice the large puffy hands, the puffiness of the face, the thickness of the lips, the puffiness of the eyelids, leaving a very small palpebral aperture. I am sure you will admit that from the look of her face she appears to have œdema due to nephritis, but remember the swelling nowhere pits on pressure. You will notice that there are scarcely any eyebrows, showing that in this disease the hair tends to fall out. The skin is dry, and the hair on the head is also scanty. On further examining her we found that she had no albumin or sugar. On looking into her mouth we saw that the tongue and uvula were somewhat swollen. As to the blood count, she has a slight deficiency of red cells; the white ones are in all respects normal. There is not so much change in the blood as you would have expected from her yellowish-white colour.

I will take one more case, and then we will speak of the disease. The patient was admitted to the hospital in January, 1882. I take her case because I made the post-mortem examination myself, and because it is of some interest historically, for it was one of the first cases in which a post-mortem examination was made after it was discovered that myxœdema was due to atrophy of the thyroid gland. This patient when admitted had a waxy, puffy, big face and pink cheeks. Her hands were swollen, the skin was quite dry and harsh, and the speech was slow and drawling. There was a minute trace of albumin in the urine. Myxœdema was diagnosed. She became a trifle better, went out of the hospital, and then had ascites and came back and died in 1884. I made a post-mortem examination, and these are the notes made about it. The thyroid gland was extremely atrophied, and there was no proper thyroid tissue left. In one or two places there was just a trace of epithelium lying in the vesicles. The connective tissue of the gland had a sodden, degenerate look. I observed that the pituitary body was very much enlarged. Later knowledge has come to show that that was a matter of considerable importance, as I will show you presently. The patient had some perihepatitis. That was probably the cause of her death and of her ascites. I pass round the atrophied thyroids from two other fatal cases.

From the notes of these cases you will have learnt that in myxœdema there is an assemblage of symptoms associated with atrophy of the thyroid gland. These three cases illustrate that the subjects are usually past middle life. As I have told you, the two first patients were 54 and 53 years of age respectively. About half the cases of myxœdema occur between the ages of 30 and 50, over one-third occur between 35 and 45. You will have noticed too that all our cases were women. The disease has been seen in men, but it is rare in them.

With regard to the morbid anatomy, we learn that sufferers from myxœdema have atrophy of the thyroid gland. The normal weight of the thyroid gland is 30 grammes; it may in myxœdema sink down to 3 or 4 grammes. The thyroids I have shown you weigh nothing like 30 grammes.

THE SYMPTOMS OF MYXŒDEMA.

As to the symptoms of the disease, you must have been particularly struck with the facial appearance of the patients—the puffiness, not of œdema, but a puffiness that does not pit on pressure—puffiness affecting the face, the characteristics of which I have shown you in photographs; notice, too, the appearance of the hands, for it was the appearance of the hands that the early discoverers of the disease particularly noticed, the big puffy hands that nevertheless do not pit on pressure. The women say they cannot get their gloves on because of this puffiness. Probably we might say that the two parts of the body showing this puffiness most are the eyelids and hands.

Then you have learnt that the skin all over the body is dry, that the patients have a malar flush, and that the hair is scanty because it falls out. There is also a slight pallor, but not much, and not much anæmia. You have learnt, also, that the tongue and the uvula are affected by the general swelling.

Even more interesting are the mental symptoms. The subjects of myxœdema are languid, disinclined to do their work; they find it is irksome to them, and they will do anything to put it off. Their speech is slow and deliberate and their memory is usually bad. Rarely, in severe cases, insanity ensues. As you might suspect, bearing in mind that the thyroid swells during menstruation and pregnancy, there may be loss of sexual capability in women suffering from myxœdema. Some women if they have not passed the climacteric seem to lose more at menstruation when suffering from this disease and some to lose less, but I doubt whether myxœdema has anything to do with it.

These patients, unless treated, are bad lives. The patient in the first of the cases which we have been discussing, who, it will be remembered, died, had slight pneumonia. In the other case that terminated fatally the patient had perihepatitis and ascites. If they do not get killed by any chance illness they are liable to die from cardiac failure or from failure of the kidney. A little albumin in the urine is by no means uncommon, and the kidney is sometimes found to be enlarged after death.

ACCOUNT OF THE DISCOVERY OF THE DISEASE.

I think that perhaps the best way to understand this remarkable disease is just to take you through the history of our discovery of it, with which Guy's Hospital has had a good deal to do.

In the year 1869 the late Dr. Hilton Fagge[1] published a paper on cretinism, and up to that time it had not been generally recognised that there were cretins in this country. It was well known that cretinism occurred in certain districts on the continent—witness Balzac's wonderful description of it. But Dr. Fagge described several cases in this country, four or five, in which the thyroid gland was small. In the account of one post-mortem examination he referred to the fact that the late Mr. Curling[2] 20 years previously had also noticed that the thyroid gland was small. But neither Mr. Curling nor Dr. Fagge drew any conclusion from the fact that in cretins the thyroid gland was small.

The most remarkable contribution to our knowledge of the subject was made by Sir William Gull. With a genius for observation and without any knowledge of the functions of the thyroid gland, he pointed out that there occurred in women conditions or symptoms which made them closely resemble cretins. It was really a brilliant piece of observation that cretinism in a child is the same as myxœdema in an adult except that the child is in addition stunted in growth. If you put a cretin side by side with a myxœdema patient I think you will agree that it requires a considerable genius in the power of observation to see that myxœdema and cretinism are the same disease. But the matter is of such importance that I think I ought to read you one of Sir William Gull's cases from his paper "On a Cretinoid State Supervening in Adult Life in Women."[3]

> Miss B., after the cessation of the catamenial period, became insensibly more and more languid with general increase of bulk. This change went on from year to year, her face altering from oval to round, much like the full moon at rising. With a complexion soft and fair, the skin presenting a peculiarly smooth and fine texture was almost porcelainous in aspect, the cheeks tinted of a delicate rose purple, the cellular tissue under the eyes being loose and folded, and that under the jaws and in the neck becoming heavy, thickened, and folded. The lips large and of a rose-purple, alæ nasi thick, cornea and pupil of the eye normal, but the distance between the eyes appearing disproportionately wide, and the rest of the nose depressed, giving the whole face a flattened broad character. The hair flaxen and soft, the whole expression of the face remarkably placid. The tongue broad and thick, voice guttural and the pronunciation as if the tongue were too large for the mouth (cretinoid). The hands peculiarly broad and thick, spade-like, as if the whole textures were infiltrated. The integuments of the chest and abdomen loaded with subcutaneous fat. The upper and lower extremities also large and fat, with slight traces of œdema over the tibiæ, but this is not distinct, and pitting doubtfully on pressure. Urine normal. Heart's action and sounds normal. Pulse 72, breathing 18.

After the publication of this paper it was known that cretinism and the condition from which that woman suffered were one and the same disease. It would have been by no means an injustice, rather the reverse, if instead of the disease being called "myxœdema" it had been called "Gull's disease," as it was discovered by Sir William Gull in 1873. But a few years after Sir William Gull's paper the late Dr. W. M. Ord [4] suggested the name "myxœdema" for the condition; he described some more cases of it, and this name has always stuck to the disease. In 1882 Reverdin [5] described exactly similar symptoms as occurring in people in goitrous districts who had the thyroid completely excised for goitre, but he did not then know that myxœdema occurred in people who had not had a surgical operation. In April, 1883, Kocher [6] described similar symptoms occurring in people from whom he had removed the thyroid gland for goitre, but he, too, did not know of the existence of the clinical disease myxœdema. The person who fitted the two together was Sir Felix Semon [7] in November, 1883. He happened to read Kocher's account of the symptoms that occur when people have their thyroid removed for goitre, and he pointed out that these were just the same symptoms as those described by Sir William Gull, and had since been known as myxœdema. It was the fitting together of the two that led to our knowledge of the cause of the disease. It was quickly seen by several observers that sufferers from cretinism and myxœdema always had atrophied thyroid glands.

INVESTIGATIONS OF THE FUNCTIONS OF THE THYROID GLAND.

Well, then a committee of the Clinical Society of London was appointed to consider the whole matter, and their report, published in 1888, has become the classical reference concerning the disease. Everybody who wants to know anything about myxœdema should refer to that report. The committee collected all the information then known about it. Their report concludes that myxœdema is dependent on a destructive affection of the thyroid gland. They collected 13 cases with post-mortem examinations, three of which came from Guy's Hospital, and in every one of the 13 the thyroid gland was found to be atrophied. This, of course, set experimental physiologists to work, and they have been working ever since on the subject, trying to elicit the functions of the thyroid. Unfortunately, it appears that the thyroid cannot have quite the same functions in all animals. The latest book on the subject of the ductless glands is a very admirable compendium by Professor Swale Vincent [8] published the other day. He gives 653 references, mostly experimental, about the thyroid alone. Because the experiments of the physiologists show that the functions of the gland vary in different animals, they do not help us as much as was hoped to explain myxœdema. May I read to you how he summarises our knowledge in the matter? He winds up by saying:—

> There is a fundamental difference of behaviour, as Horsley taught, between different classes of animals, and this is as true when the parathyroids enter into discussion as when omitted. It is not, therefore, due to anatomical difference, nor probably to mere variations in feeding, but to deep-seated physiological conditions. The author's conclusions were as follows: It cannot be truly said that either thyroids or parathyroids are essential for life, since it is frequently possible to remove either or both without causing death. Rats and guinea-pigs do not seem to suffer at all as the result of extirpation. Monkeys only show transient nervous symptoms. Dogs and cats frequently, but by no means invariably, suffer severely and die. In foxes symptoms come on with very remarkable rapidity and death is correspondingly early. The diversity of results obtained in different classes of animals is not to be attributed to anatomical but to physiological differences. In no animals have we been able to induce symptoms resembling those of myxœdema. In young animals, although extirpation of the thyroid causes a temporary cessation of growth, we find that this is not necessarily accompanied by symptoms of a cretinoid nature. Myxœdema and cretinism must then, we think, be due to causes more complex than simple thyroid insufficiency. When the thyroid is removed the parathyroids appear capable of functionally replacing it to a certain extent, and their histological structure changes accordingly.

It is clear that it may well be that the glands act differently in man and various animals. It is evident, therefore, that we do not have very much help in the explanation of myxœdema from the vast amount of experimental work that has been done. But that the symptoms of myxœdema in man are due to the absence of the thyroid gland is incontrovertible. First of all, there is the pathological observation that in every fatal case of myxœdema the thyroid is atrophied. Secondly, as a result of the operation, happily now never done, but which surgeons used to do—namely, excision of all the thyroid gland—all these people treated by that means had myxœdematous symptoms. Lastly, but not least—and I will come to that in a minute—if you give to a person with myxœdema, or if you give to a cretin or to a person from whom the thyroid gland has been excised, thyroid gland by the mouth all the symptoms pass away. There is no fact in medicine more conclusively proved than that atrophy or loss of the thyroid gland in man is the cause of myxœdema.

During the last 15 years or so there has been much discussion as to the value of parathyroids to the human subject, and most conflicting experimental results have been obtained. It can be summed up in saying that there is no evidence that parathyroids have anything to do with myxœdema.

THE PITUITARY GLAND IN RELATION TO MYXŒDEMA.

Now we come to a much more important point. As you know, the pituitary body is composed of two parts—namely, the posterior nervous and the anterior glandular part. You know from your physiology books the importance of the pituitary. To-day we can only speak of it in relation to myxœdema and the thyroid gland. That there is close connexion between the thyroid gland and the pituitary body is undoubted. For example, listen to this. Cushing, in his recent work on the pituitary body, says [9]:—

> Thanks to the conclusive studies of Erdheim and Stumme, the question of functional hypertrophy (of the pituitary) has passed beyond the stage of conjecture. These authors have demonstrated by actual measurement of 150 glands of pregnant women not only the occurrence of a definite colour change from greyish red to white, but also an increase in the size and weight of the structure. Thus, the average weight of the gland of primipara was found to be 84·7 cg., the observed maximum being 110 cg., whereas the average of nullipara was 61·8 cg., with a maximum of only 75 cg. After parturition there occurs a subsidence, the involution being complete at the termination of the period of lactation. With a succeeding pregnancy a further augmentation takes place, the glands of multipara averaging 106 cg., with an observed maximum of 165 cg.
>
> What is more important, definite histological changes are apparent in the pars anterior where there occurs a multiplication of large neutrophilic elements which are apparently derived from the normal chromophobe cells. The acidophilic cells no longer dominate the field, and such of the characteristic eosin-staining elements as are to be found are seemingly crowded away from the sinuses which they once lined. It is many months after parturition before the acidophiles regain their former predominance. In the pars anterior of pregnant dogs, cats, and rabbits, as well as of the few human glands that we have examined, the picture described by Erdheim and Stumme has been present.

So that you see that during pregnancy there is a considerable enlargement of the anterior part of the pituitary body, and you know the same to be true of the thyroid. Then histological changes occur in the thyroid gland when the pituitary body is extirpated in animals. Further, you know that acromegaly is due to disease of the pituitary body. Out of 24 cases in which the thyroid gland was examined in persons who died from acromegaly, in only 5 was the thyroid gland normal. In 15 cases of disease of the pituitary in which the thyroid was examined there was some alteration in the gland. So that considering that we have learnt that the anterior lobe of the pituitary body swells during pregnancy, and that when there is disease of the pituitary gland there is alteration in the thyroid body, and there is alteration in the thyroid gland when the pituitary body is excised in animals, you are not surprised to hear that when the thyroid gland is atrophied, as in myxœdema, there are changes in the pituitary body. You will remember that in the third case I mentioned, that of the woman in the hospital in 1882, I was struck when I made the post-mortem examination with the fact that the pituitary body was enlarged, and I mentioned this in my report of the case. Unfortunately, I did not cut sections of it. I was wiser when my patient died last February (the first case given in this lecture), and Dr. William Johnson kindly cut sections of the pituitary body. If you will look at them after the lecture you will see that the whole of the pituitary body is much larger in our case of myxœdema than in the normal, for a normal one is placed for contrast. That enlargement, you will see, is due to enlargement of the anterior lobe of the pituitary gland. If you look at the sections of the anterior lobe in health and in myxœdema under the microscopes on the table, you will see the anterior part of the gland is in a state of very considerable functional activity in myxœdema. There are a large number of vesicles in it lined with epithelium, containing colloid material, and looking exactly like thyroid vesicles. And I think you will agree with me that it is a legitimate inference to state in regard to this woman that when her thyroid gland

failed her because it underwent fibrous atrophy, as you can see in this section, the pituitary body attempted to compensate for this by hypertrophy, as you can see in that section. That is confirmed by the fact that many observers have noticed that in myxœdema the pituitary body is enlarged.

You may ask, What causes this change in the thyroid? I do not know, but one or two facts I would like to draw your attention to. Myxœdema is much commoner in women than in men. Then nearly all the women who have had myxœdema have borne children, often very many children, often in quick succession. Then the thyroid gland swells up during menstruation and during pregnancy in many women. So that it seems that the disease must in some way usually have something to do with sex. But, as you would expect, when myxœdema is due to deliberate excision of the thyroid the disease is equal in the two sexes. Thus of the subjects who have had their thyroid glands in the past excised for goitre myxœdema is equal in men and women.

THE VALUE OF THYROID TREATMENT.

When it was discovered what the disease was due to, people transplanted thyroid gland from animals under the skin of myxœdematous patients and great benefit followed. But the gland soon became absorbed and it was clear that it would have to be constantly transplanted if a cure was to be effected. Then Dr. George Murray[10] injected a glycerine extract of thyroid under the skin, and again improvement took place. Happily Dr. Hector Mackenzie,[11] of St. Thomas's Hospital, took to feeding myxœdematous patients with thyroid extract, and it was found that they got quite well. It is one of the most remarkable things in medicine to see the improvement that follows. The usual thing to do is to begin with about 2 or 3 grains a day and gradually work the amount up until the patient has 5 grains three times daily. That is a large dose and should not be exceeded. When the patient appears normal you will gradually diminish the dose until you find the dose that the patient must take in order to keep the myxœdema constantly in check. Usually speaking, the amount required is from 5 grains a day to 5 grains a week, and it may be taken for the whole of life. It is most conveniently given, as you know, in compressed tablets.

It is clearly important that you should know what are the symptoms of an overdose of thyroid extract. To illustrate that, I remember well that one evening a practitioner rang me up on the telephone and said his wife was ill and asked me to come to see her. Certainly she did appear very ill when I saw her. She had a rapid pulse, she was nervous, had a headache, was restless, complained of nausea, and had some diarrhœa and general weakness. I found that this lady was one of Dr. Ord's first myxœdema patients. He had diagnosed myxœdema and given her thyroid extract, and whenever she felt run down she took more of the extract, and never informed her husband of the fact, and so I found that she was suffering from thyroid poisoning. From time to time you will come across people who take more thyroid extract than is good for them, and you must remember that the symptoms of thyroid poisoning are chiefly a rapid pulse, restlessness, some weakness, and diarrhœa. There will probably be some glycosuria present as well.

THE IMPORTANCE OF RECOGNISING EARLY CASES.

Myxœdema is such a striking disease that I do not think, when once you have seen a picture of that woman, you could miss the symptoms if they are advanced, but you must learn to detect the early cases. Remember that they are frequently completely overlooked. Probably in this country at the present time there are scores of women going about out of health and not knowing quite what is the matter with them and not being successfully treated. What is the matter with them is that they are mild cases of myxœdema that a little thyroid extract would cure.

Remember, then, that mild cases of myxœdema are commonest in women from about 30 to 40 years of age. They come to you complaining that they are not up to the mark and are gradually losing ground, that their household duties are irksome to them, they become tired, they cannot deal with the servants and the children, everything wearies them. This state of things goes on and then they say they feel cold, and people notice that they look a little pale or their cheeks are flushed. When you examine them you notice that their skin is dry, and they very likely tell you that their hair is coming out, and when you pass your hand through it it feels dry. Sometimes when they are walking into the room their face arrests your attention. There is nothing sharp about the lines of it. Perhaps you notice that there is a little puffiness under the eyes. Let me relate a case.

I saw a woman who about three years before went through a normal pregnancy. The confinement was severe. After it she was anæmic and rather puffy looking. Later she looked pale and generally flabby and had a feeble pulse. She came to me with general languor. She said she had gained a stone over her usual weight. She certainly looked slightly puffy under the eyes, and because of general puffiness round the neck she had to wear bigger collars. I looked at her uvula and it was somewhat swollen. She admitted that she was slow mentally. If there were a room-full of people she would not pay much attention to what people were saying. On examining her thyroid I could not feel it at all. All the symptoms I have mentioned were so slight that they hardly attracted attention. The woman was at once put on thyroid extract. For the last two years she had been taking 5 grains a day and she is now perfectly well, and you would not know she was the same woman as when I first saw her. So rapid was the improvement that a few weeks after a letter said: "She is very much better. In appearance she is better and has lost that heavy look. She is still losing weight." A note written shortly afterwards said: "She is wonderfully better. People do not know her when they see her because her improvement has been so great." So that you see the improvement goes on very rapidly, and I think that this case illustrates to you the importance of recognising these early cases. I want you particularly to be on the lookout for these early cases.

The last thing I would draw your attention to is that the thyroid gland tends to atrophy in men and women as they increase in years. When making post-mortem examinations I cut sections of 40 consecutive thyroid glands.[12] I examined the whole of them without knowing either the name or the age, or the sex of the patient or what the patient died from. The way it worked out was this: that the gland certainly became smaller as the patient grew older. The smallest thyroid gland I examined of the 40 was that of a woman 77 years old. Among the 40 glands, three were very degenerate thyroids, and the ages of their possessors were 45, 54, and 54. So that you see the thyroid gland sometimes diminishes in size as we become older. Perhaps some of those in whom it does would be better for small doses of thyroid.

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UNIVERSITY COLLEGE, LONDON.—A number of special lectures in the medical sciences will be delivered at University College, London, during the current term. The lectures under the Semon Trust will be inaugurated on Jan. 22nd and 24th, when Dr. Peter McBride will deliver two lectures on Sir Felix Semon, his Work, and its Influence on Laryngology. The first of the Page May memorial lectures on the Functions of the Cortex Cerebri, by Dr. F. M. Mott, F.R.S., will be delivered on Friday, Jan. 24th, at 5 P.M., and will be continued on succeeding Fridays until March 14th. The first of a course of lectures on the Physiology of Vision and Colour Vision, by Dr. F. W. Edridge-Green, will be delivered on Wednesday, Feb. 19th, at 5 P.M., and will be continued on succeeding Wednesdays until March 12th. The Galton laboratory lectures on National Eugenics will be delivered at the College on Tuesdays at 8 P.M., beginning on Feb. 11th. They are organised by the Galton Professor (Dr. Karl Pearson), assisted by Dr. G. A. Heron, Miss Ethel Elderton, and Mr. Palin Elderton.

ON METHODS OF RESEARCH AVAILABLE IN THE STUDY OF MEDICAL PROBLEMS,

WITH SPECIAL REFERENCE TO SIR ALMROTH WRIGHT'S RECENT UTTERANCES.

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Introduction.

MANKIND are pretty well agreed that attempts on the part of those unversed in the technic of any branch of scientific inquiry to lay down precise rules for the guidance of actual workers, and to formulate laws descriptive of the processes by which truth is attainable, do not sensibly improve the conditions under which scientific research is carried out. On the other hand, when the methodologist is himself an investigator of high standing, whose name is associated with genuine achievements in the domain of science, it is rightly held that his conception of the means best calculated to attain definite scientific ends at least deserves the serious attention of other workers. For these reasons the utterances of Sir Almroth Wright merit careful examination. It will hardly be disputed that Sir Almroth Wright is a leader in a branch of scientific medicine highly esteemed by some of the best contemporary minds, and it is perhaps hardly less doubtful that the present state of medical science is not altogether satisfactory. The latter circumstance may be attributable to a failure to grasp both the ends capable of being reached and the means to be preferred. If Sir Almroth Wright has thrown light upon these matters, no insignificant item has been added to the world's debt of gratitude to him.

Sir Almroth Wright has recently enunciated various methodological conclusions of far-reaching importance, and I propose to attempt an examination of their scope and validity. It will, perhaps, appear an act of presumption on my part to enter the lists with so redoubtable an adversary, but some justification is afforded by the following circumstances. Sir Almroth Wright has satisfied himself that the application of statistical or biometric processes to medical problems cannot yield trustworthy results. The number of biometrically trained medical men is still small, and, so far as I am aware, I am the only one in this country holding a post expressly created to further the application of biometric methods in medicine and pathology. I seem, therefore, honourably obliged either to acknowledge the justice of Sir Almroth Wright's conclusions or publicly to state the reasons which lead me to think them unsound, and to submit for criticism the principles I hold to be just.

One further preliminary remark may be desirable. I believe that honest controversy is of value to science. The contempt in which the former is increasingly held is due to the ebullitions of temper and the direct or veiled attributions of unworthy motives which mar so many discussions.

The present topic is highly controversial; I have endeavoured to bear in mind the words of Cromwell: "I beseech you, in the bowels of Christ, think it possible you may be mistaken." If, however, in the heat of conflict or the vanity of authorship I have used any expression unseemly in one discussing a vast and complex subject with an older and abler man, I beg that the offence may be attributed to carelessness, not to malice.

I. *Sir Almroth Wright and the Opsonic Index.*

Sir Almroth Wright's final pronouncement on the rightful place of a statistician is to be found in his "Report on the Pharmaco-therapy of Pneumococcus Infections, and on the Methods by which such Therapeutic Problems ought to be Investigated,"[1] but before we consider this report in detail it is necessary to form a clear idea as to what its author really takes to be the statistical method and as to his attitude towards statisticians in a concrete case. Very fortunately, an example of the latter is to hand, and, indeed, Sir Almroth Wright's recent generalisations were, if not inspired, at least stimulated, by a contemplation of this particular case. I therefore propose to examine it in some detail.

Some years ago, in 1907–08, a discussion arose (not by any means the first which had taken place) respecting the value of determinations of the tuberculo-opsonic index. The exciting cause was a paper by Miss M. P. Fitzgerald, Mr. R. I. Whiteman, and Mr. T. S. P. Strangeways[2] in which the value of such determinations was seriously questioned. Being at that time in touch with enthusiastic advocates of Sir Almroth Wright's methods, I naturally heard a good deal of talk about the matter, and the impression I derived was that no one had very definite ideas as to how wide the limits of normal variation might be when the test was carried out by competent technicians. Some thought that all indices beyond the limits 1·1 and 0·9 might be regarded as strong, if not convincing, evidence of abnormality; others made even higher claims for the accuracy of the process. Since the most casual inspection of actual films or even of the published writings of observers showed that the phagocytic content varied from cell to cell; since, further, divergences of opinion between authors, each of whom had at least *primâ facie* claims to speak with "authority," were considerable, it seemed that some degree of accuracy should be imported into the discussion by an analysis of phagocytic counts. Had I been one of the purely mythical "statisticians" who bulk so largely in Sir Almroth Wright's more speculative pages, I suppose I should have employed a laboratory servant to count cells on films prepared by myself and have speedily amassed data which would have been, in point of numbers, everything that could be desired. Actually, I applied to Sir Almroth Wright himself, explained the object of my inquiry, and asked him to supply data which would be above the suspicions freely bandied about respecting Strangeways's material. Sir Almroth Wright kindly acceded to my request and sent me records of cells prepared and counted by his assistant Mr. Alexander Fleming. Mr. Strangeways also placed his material at my disposal, and I selected therefrom certain records which corresponded in point of numbers counted with those of Mr. Fleming. I did not realise at the time, but have since ascertained, and now explicitly state (as we are engaged in a scientific discussion, not a comic opera, there can be no reason for secrecy), that these slides also were prepared in Sir Almroth Wright's laboratory, although they were enumerated by Mr. Strangeways. The material therefore at my disposal consisted *entirely* of slides prepared in Sir Almroth Wright's laboratory, and partly of slides both prepared and counted in that laboratory. Dr. Douglas White and I then analysed these data by biometric methods, this work forming the subject of our first memoir in *Biometrika*.[3] The results so far as they affect the present issue were as follows. 1. Phagocytic counts have pronouncedly asymmetrical distributions. 2. The means of samples of 25 are also asymmetrical in distribution and, in samples of this order, deviations outside the limits 1·2 and 0·8 may frequently occur in normal material. 3. There was no reason to suppose that Strangeways's method of enumeration led to worse results than that of Fleming. The inferences we drew from these results were firstly that the variability of the opsonic index in normal sera might well be greater than Sir Almroth Wright's adherents had realised; secondly, that such variations as Strangeways and his collaborators had found could not fairly be held to flow from their unskilful methods of counting.

It is worth noting that quite independently Major W. F. Harvey, I.M.S., and Captain A. G. McKendrick, I.M.S.,[4] who also employed biometric methods, concluded that the tuberculo-opsonic index might be of value *when the index fell beyond the limits 1·2 and 0·8*.[5] It is proper, however, to add that these authors expressed a more favourable opinion of the opsonic method in general than in the case of the tuberculo-opsonic index in particular. I may as well state here that I am not in a position to offer any opinion whatever as to the accuracy of the opsonic index in connexion with any organism but the tubercle bacillus. Both Dr. White and I have been frequently assured that other organisms are far

[1] THE LANCET, Dec. 14th and 21st, 1912.

[2] Bulletin of the Committee for the Study of Special Diseases, vol. i., 1907, No. 8 (Cambridge).

[3] Biometrika, vol. vi., 1909, p. 366.

[4] Biometrika, vol vii., 1910, p. 64.

[5] Their words are: "The tuberculo-opsonic index is capable of giving in routine practice definite indications of the positive or negative opsonic activity of serum *for values which range outside 0·8 and 1·2*." (The italics are mine.)

more satisfactory material for inquiry, and urged to apply biometric methods thereto. Three considerations have deterred me from following this advice. The first is that the value of the opsonic test has been, and still is, rated very high by Sir Almroth Wright in the diagnosis of tubercular infections and as a control in their treatment; the second is a memory of certain adventures of Isaac detailed in the twenty-sixth chapter of Genesis; the third a disinclination to spend an inglorious old age in the reduction of endless phagocytic counts.

Returning now to the conditions created in our minds by the result of our first analysis, it seemed plain that further work required to be done before we could hope to form an exact idea as to how variable the opsonic index really was, since we required a much larger number of cells than had so far been dealt with. To fulfil our conditions we required an enumeration of some 20,000 cells, and it did not seem reasonable to expect other workers not interested in our methods and sceptical as to their value to undertake so laborious a task. My collaborator, Dr. White, accordingly did the work himself. Dr. White had had 18 months' previous experience in the inoculation department of the London Hospital; in other words, at least as complete a training in the special technic as many gentlemen whose opsonic estimations have been received with respect. We might therefore have urged that the onus of proof lay upon our critics, and that they should demonstrate, not assume, the enormous "functional errors" vitiating White's counts. We were, however, fully alive to the fact that had the count been specially made by an archangel and yet revealed on analysis sensible departures from the model furnished by the Fleming counts, it would have been instantly rejected as worthless by Sir Almroth Wright and his followers. We accordingly made a careful comparison of the form of distribution revealed by our count and the types conformed to by the great exemplar from St. Mary's (incidentally we postponed the publication of our results for some months until we had specially considered the effect of one departure from the previous technic). Such differences as we noticed seemed of little interest to any but biometricians; in the particulars essential to the objects of the inquiry there was no divergence not attributable to errors of random sampling or the thickness of the bacillary emulsion employed. Fortified by the results of this examination we seemed to be justified in attempting to answer the vital question, What are the limits of variation within which the opsonic index will be likely (the grades of likelihood being expressed quantitatively) to fall when a serum is tested against itself, the index being based on counts of 25, 50, or 100 cells? That is to say, With what frequency may specified deviations from the theoretical value, unity, be expected to occur? This is plainly the simplest test that can be employed, since the possible variations of opsonin in *different* normal sera, which would in practice introduce a further source of error, are excluded.

Naturally having given the distributions of the original quantities used in forming the ratio called an opsonic index, the question is theoretically capable of direct algebraical solution. This was the method by which we first proceeded, but the formula deduced by us was not, for theoretical reasons, satisfactory, and we fell back upon an empirical process, fully described in our memoir; we determined the required limits by actual trial. The results obtained were as follows.[6] 1. The odds against a second sample of the same material giving an opsonic index in terms of the true mean outside the limits 1·2 and 0·8 are in the case of samples of 25 about 3 to 1, in the case of 50's about 6 to 1, and for 100's about 15 to 1. 2. When the index is estimated on the basis of two small samples and without determining the mean of the normal series from a long count (that is to say, when an index is determined in the ordinary course of routine work) the odds are reduced to 1·5 to 1, 2 to 1, and 4·6 to 1 respectively, for samples of 25, 50, or 100. 3. Even in the case of samples of 100, it is doubtful whether *single* determinations which give values even beyond the limits 1·3 to 0·7 can be regarded as altogether satisfactory evidence of differentiation (the odds against such a deviation occurring as an error of random sampling in normal material are 19·5 to 1, that is, the event is not a very improbable one).

These findings suffered from the weakness of being based upon a small number of trials out of the infinite number of possible trials, but subsequently Pearson[7] deduced a formula, free from the limitations of our own, which allowed the first method—i.e., that of deduction from the constants of the original frequencies—to be adopted. The agreement between his results and our own proved, on the whole, remarkably close. Sir Almroth Wright had up to this point made no public comment upon our findings, but he now, in speaking of those who had criticised the employment of the opsonic index, observed, *inter alia*:—

> I suggest that those critics who have put forward figures showing enormous working errors in opsonic estimations may have supplied to the world data with regard to the magnitude of their own functional errors, instead of—as self-esteem assured them—data with regard to errors inherent in the opsonic method.[8]

Professor Karl Pearson, who naturally concluded from this remark (assuming it to be applied to our work amongst that of other critics) that Sir Almroth Wright was not satisfied with our conclusion that the White count conformed sufficiently to the standard of St. Mary's from the point of view of technique, requested me to supply him with data in order to permit of an independent investigation of so important a point. I accordingly forwarded the material to Professor Pearson's laboratory, and an analysis following somewhat different lines from that of White and myself was undertaken. The results of this inquiry were as follows[9]:—

1. The same degree of variation in the opsonic index of an individual tested against himself arises when external investigators count slides prepared inside or outside Sir Almroth Wright's laboratory. It seems improbable, therefore, that "enormous working errors" are functional errors due to the defective preparation of the slide.
2. The same degree of variation in the bacilli per leucocyte arises when the slides are prepared and counted (*a*) inside or (*b*) outside Sir Almroth's laboratory. The population of a slide therefore shows the same high degree of variation under both conditions.
3. The variation of 20 independent means of 50 from the same individual is of the same order in the case of internal and external workers. The variation of the opsonic index of the same patient tested against himself is as great for the slides tested whether they be of internal or external origin.
4. There is a difference in the nature of the written records of the counts. The "external" counters worked backwards and forwards across the slide, recording continuously by aid of a mechanical stage. I have no knowledge of how Dr. Fleming's record was entered, but, while it exhibits the same order of variation in the bacilli per leucocyte, the large and small numbers of bacilli appear to be distributed more at random within the groups of 50 in the record.
5. The results reached are consonant with the "enormous working errors," being for the most part the variations of random sampling; they are not consonant with any wide differentiation resulting from defective technique or from serious individual peculiarities in counting and recording.

It will be seen that these findings amount to an independent confirmation of our principal conclusions.

Perhaps stimulated again by this paper, Sir Almroth, in his recent "Handbook of the Technique of the Teat and Capillary Glass Tube,"[10] honoured White and myself with somewhat more direct notice than formerly. It is true that no bibliographical references are given in the appendix to Chapter IX., entitled "A Consideration of the Contention of the Mathematical Statistician that he has Authority to Pronounce Judgment upon the Number of Leucocytes which Require to be Counted in the Opsonic Film," but, as my name is the only one appearing therein, it is not an unfair presumption that the strictures passed have special application to the papers of White and Greenwood. The language used by Sir Almroth Wright in this section will, I think, be valuable material for those who desire to judge fairly between him and us.

On p. 164 of his book, after drawing attention to the fact that the word "significant" is employed by different people in different senses, and that some readers might infer, when these terms are used, that the user has some scientific resources at his disposal which allow him to state whether certain differences are or are not the effects of random sampling, Sir Almroth Wright says:—

> It cannot be too clearly understood that the mathematical statistician has no such secret wells of wisdom to draw from, and that his science does not justify his going one step beyond the purely numerical statement that—as computed by him from the data he has selected as suitable for his purposes—the probabilities in favour of a particular difference being or not being due to the operation of chance are such and such.
>
> There need, therefore, be no hesitation in saying that when the mathematical statistician makes free with the terms *significant* and *non-significant*, he is simply taking upon himself a function to which he can lay no claim in his capacity as a mathematician.

[6] Biometrika, vol. vii., 1910, p. 505.

[7] Ibid., p. 531.

[8] Wright: Vaccine Therapy, Its Administration, Value, and Limitations, Proceedings of the Royal Society of Medicine, vol. iii., 1910, p. 29 of reprint.

[9] Biometrika, vol. viii., p. 203.

[10] London, 1912, Constable and Co.

It is well to remember that the majority, the immense majority, of Sir Almroth Wright's readers would know precisely as much about the statisticians' work as he chose to tell them; indeed, he does not, by citing the papers criticised, even put his readers in the way of studying the stigmatised works at first hand. The question is, therefore, what inference an ordinarily intelligent reader would draw from the words quoted. I think the inference must be that the statisticians have used a common word in a specialised sense, and have consciously or unconsciously misled the ordinary reader. It would be inferred that if the statisticians had defined their terms Sir Almroth Wright would have said as much. Some students of Sir Almroth Wright's book may therefore be surprised to learn that in one of the papers of White and Greenwood the following passage occurs:—

> If we adopt about a ten to one chance as the limiting value for evidence of differentiation, then the limits for single determinations of the index are roughly ..... Everyone has his own standard of accuracy or reliability; all we mean is that unless a given index is beyond these limits, the chances are less than ten to one against its being drawn from a normal population.[11]

Again, in a preliminary note intended for the lay reader, I remarked that "the term significance, as used by the statistician, has a somewhat specialised meaning," and gave certain numerical illustrations, concluding with the words: "Evidently each must judge for himself what limit of probability to take as a standard, but it is well to remember that such standard is, in some measure, arbitrary."[12] Assuming that Sir Almroth did not consider these passages sufficiently clear, it is strange that he did not at least give his readers an opportunity of forming their own opinions. After all, and I hope there is no undue bitterness in the remark, it is rather a grave charge to bring against scientific writers that they have attempted to make capital out of the ambiguity of common words. Such a charge ought not to be insinuated without good grounds. I hope to have demonstrated that Sir Almroth Wright had no grounds whatsoever, good or bad, for the accusation.

I now turn to a more important matter. After dealing with the technical difficulties of opsonic estimations, Sir Almroth Wright says:—

> But the principle which holds of the hæmocytometrical will also hold in connexion with the opsonic count. There is no logical principle to compel anyone to pay a ransom for the incompetence of others by himself counting more cells or squares.
>
> In the opinion of the mathematical statistician all this will be beside the mark. "Have I not"—thus, no doubt, will run his mental comment—"specially gone out of my way to guard against such absurdity being imputed to me by basing my computation of the number of leucocytes which require to be counted upon data in which the functional error of the operator has been brought down to its absolutely irreducible minimum?"
>
> The good intention may be very freely conceded, but the statistician has perhaps overlooked the fact that he does not, in his capacity as an expert with figures, possess—and his record proclaims this truth aloud—any greater qualification for deciding what is good or bad technique than for deciding what measure of probability may safely be taken as a guide in practical medicine.[13]

Once more we have to remember the probable knowledge of the ordinary medical reader. Would he be likely to infer from these remarks: (1) that our first paper was based entirely upon material supplied from St. Mary's Hospital, part of it both prepared and enumerated, the whole of it prepared in the very *sanctum sanctorum* of the opsonic ritual? (2) that two independent examinations (Pearson's and our own) had failed to reveal any essential difference between the material prepared outside and that prepared inside St. Mary's?

It is, of course, conceivable that the passage I have quoted is Sir Almroth Wright's way of intimating that he has grave doubts as to the adequacy of the St. Mary's technique, but if this be so, he should really have told us whom we ought to trust in these matters. The conclusion which I invite the reader to adopt is that Sir Almroth Wright's principal accusations consist of more or less serious misrepresentations of what the statisticians really did. This seems to be due to a very superficial examination of the work stigmatised, and suggests that Sir Almroth Wright has either read the papers in question carelessly or is unable to comprehend them. The adoption of either alternative goes far to discredit the claim he, in effect, makes to sit in judgment upon the applicability of statistical methods to medical problems. It is true that in the last sentence quoted Sir Almroth Wright raises the question of the degree of probability or improbability which should be adopted in deciding medical points, but as a decision on this matter presupposes the applicability of the statistical method by which the probabilities are enumerated, it can hardly be raised seriously in view of Sir Almroth Wright's repudiation of the method.

Whatever view the reader may form as to the justice of my conclusions, he will certainly agree that this examination of the opsonic index controversy is a necessary prelude to a study of Sir Almroth Wright's scientific principia.[14] Statistical researches are laborious in execution, and even the perusal of their results entails some degree of attention. Many people have, I am sure, been relieved to hear on Sir Almroth Wright's authority that the technical processes evolved by biometricians have no value in medical inquiries. It may not be amiss to quote a few sentences of Macaulay's criticism of the utilitarians:—

> We apprehend that many of them are persons who, having read little or nothing, are delighted to be rescued from the sense of their own inferiority by some teacher who assures them that the studies which they have neglected are of no value, puts five or six phrases into their mouths, lends them an old number of the *Westminster Review*, and in a month transforms them into philosophers.

If there be any in medical circles disposed to welcome a teacher who contemns statistical reasoning, they should consider whether his own competence in the subject is beyond criticism.

We may now pass to the examination of Sir Almroth Wright's finally matured process of inquiry, his new medical organon.

II. *Sir Almroth Wright's Analysis of Scientific Methods.*

I must premise this section with the remark that, although I frequently cite the actual words of Sir Almroth Wright, it is difficult to give an accurate summary of another's reasoning in the case of a controversial topic like the present. The reader is asked to check my summaries by comparing them with the original statements.

Sir Almroth Wright reduces the methods at our disposal to two genera, Crucial Experiments and Cumulative Experiments. The characteristics of a crucial experiment are said to be "(*a*) The experiment can be instituted only when perfectly simple experimental conditions have been arrived at; (*b*) we obtain, on repeating the experiment, always the same result; (*c*) the conclusion which emerges is a categorical or universal truth—i.e., a truth which holds good everywhere where the conditions which are laid down for the experiments are realised." Since this method is not further discussed, I may interpolate here the few observations I desire to make.

Sir Almroth Wright does not, I think, realise that the fundamental distinction attempted to be made by him between this and other methods is illusory, and has overlooked the force of his own words under (*b*) (*supra*). One naturally asks *how many* repetitions of the experiment justify the assertion that (*b*) *has* been fulfilled? The anti-statistician who considers this point will have some misgivings lest after all the application of a canon of statistical inference be involved. As a sometime demonstrator of physiology I may cite a familiar "crucial" experiment. Three test tubes are prepared (A, B, and C). A contains fibrin, glycerin extract of pig's stomach, and water; B contains the same ingredients except that 0·2 per cent. solution of hydrochloric acid is substituted for the water; C is the same as B except for the omission of the gastric extract. The three tubes are incubated at body temperature for, say, half an hour, and at the end the student notes that the fibrin has partly disappeared from B and is unchanged in A and C. The student is expected to draw from this formal experimentum crucis the conclusion that the presence of mineral acid is essential for the performance of proteolytic action by gastric extract. Since the experiment has been repeated countless times the conclusion is logically warranted, but in truth the conclusion is not really drawn from the individual experiment, which is strictly more of the nature of a demonstration than a proof. Let us place ourselves in the position of the physiologist who, moved, let us say, by some speculation, first performed the experiment,

[11] Biometrika, vol. vii., p. 520.
[12] The Practitioner, May, 1908, p. 8, of reprint.
[13] Wright: op. cit., p. 165.

[14] It will also be remembered that the *quantitative* nature of the opsonic method has often been contrasted by its admirers with the qualitative and "authoritative" methods of the ordinary clinician.

would he have been justified in straightway proclaiming that he had *proved* the point? Suppose some serious therapeutic issue turned on an answer to the question, Is gastric proteolysis possible in the absence of mineral acid? would he be justified in taking action upon the strength of a single crucial experiment (assuming even that all his materials were chemically pure)? The answer is, of course, No, and Sir Almroth Wright recognises this by his condition (*b*).

We find ourselves, therefore, compelled to evolve some logical process in virtue of which we can ascertain how nearly, in any given case, the condition (*b*) has been fulfilled. Were Sir Almroth Wright better acquainted with the history of mathematical statistics, he would know that a problem closely akin to this one is a classic of the science. The matter is of interest as an example of Sir Almroth Wright's incomplete grasp of the principles he essays to describe, but is not otherwise germane to the discussion, and we may pass on to the subject of cumulative experiments.

We fall back upon the *method of cumulative experiments* when we have to experiment in conditions which cannot be sufficiently simplified to allow of the institution of a crucial experiment. When this is the position of affairs we can no longer expect to obtain on repeating our experiments always the same result. And we here can no longer hope to deduce a law from the data of a single experiment,[15] or to formulate a thesis which will hold true in every individual case and of every individual in a class. Conclusions which will be of value can, however, still be reached by marshalling and evaluating the data of a series of substantive experiments and a series of control experiments, and comparing these together. These data may be marshalled and evaluated either (*a*) by the *experiential method*, or (*b*) by the *statistical method*.

The characteristics of the *experiential method* are that—

We take into account the whole complex of impressions which have been left upon the mind by experience, we arrive at a *generalisation* (which is the general law or general evaluation of the class). This will express the result which we have witnessed in the majority of our cases; and it will, if our experience is a typical one, hold good of a majority of every other series of such cases.

This method is said to be one of "unrestricted outlook," every feature of the case or experiment having its proper share in forming the impression left upon the mind. Its application presupposes a high degree of skill upon the part of the experimenter and reasoner who are, and must be, one and the same person. All great advances in medicine, such as the employment of quinine in malarial diseases, have been arrived at by the employment of this method, and the rules as to what conclusions obtained by this process are valid reduce to the following:—

(*a*) *Experiential judgments with respect to which there is among observers a serious difference of opinion need not be accepted.*
(*b*) *Experiential judgments to which every qualified observer subscribes must be accepted.*

The expressions "serious difference of opinion" and "qualified observer" are neither defined nor illustrated, but with respect to the former term, it would appear that what is required is a "consensus, or a practical consensus of expert opinion" and with regard to the latter that "qualified" = "expert."

Again—

Where there is a conflict of opinion between observers the proper course to pursue is to appraise the relative weight of the authorities who are ranged over against each other.

In certain cases, a unanimity of expert opinion has supported an incorrect conclusion—e.g., the universal vogue of blood-letting. This was due to neglect of an essential part of the experiential method—viz., the institution of control experiments.

The *statistical method* involves three operations.

1. Critical study of the raw material.

We here endeavour to discover in our cases a criterion upon which to build up our statistics. This criterion may be either (*a*) a really *critical feature* (the fact of escaping infection, or of recovering from attack would, for instance, constitute such a critical feature) by reference to which our substantive and control cases can be distributed into two sharply contrasted sub-groups of pluses and minuses, the individual cases being represented by a plus or a minus according as they do, or do not, exhibit the critical character; or (*b*) a *feature* which is common to all the cases, which can be expressed in figures and which *varies in a significant manner* (let us say such a feature as the number of days during which each patient's temperature has ranged above the normal).

2. Sifting the raw material.

The basis upon which we are to go to work having been settled, we construct upon that basis a skeleton framework for our tables, and enter each substantive and control experiment as it comes in its proper column, putting out of sight and regard every element in the case other than the feature we have elected to consider.

3. Evaluation of the results.

We count up the pluses and minuses and find the relative proportion of these in our series of substantive and control cases; or, as the case may be, we total up the figures which represent the respective values of the significant feature in each individual case, and make a comparison between the totals for our two groups of cases. In either case we express the final result in the form of a percentage; and, where the occasion calls for this, compute, or have computed for us, the "probable error" which we should be incurring if we took the substantive and control cases upon which we based our calculations as absolutely average samples of the classes they represent.

The difficulties of this method lie in the discovery of a really critical feature. Thus, in the case of phthisis, we have several possible criteria—e.g., the disappearance of bacilli from the sputum, a gain of body weight, the disappearance of pyrexia, &c. It might be suggested that we could obviate the difficulty by "allotting a certain arbitrary number of marks to each significant clinical phenomenon and then evaluating in accordance with such convention."

But such a scheme would resolve itself into—

A proposal to make a number of separate statistical tables, and to combine the results in such a way as to make the statistical method a method of unrestricted outlook.

This proposal would—

Make shipwreck upon the fact that it would be impossible to include every case in every column of such a compound statistical table (the apyrexic cases, for instance, would have to be omitted from the column relating to pyrexia). And, again, it would make shipwreck upon the fact that there would be no accepted rate of exchange at which improvement in one respect could be reckoned against improvement in another; no basis for setting off, let us say, a temporary gain in weight in one patient against a temporary reduced pyrexia in another.

The statistical method also requires a much larger number of cases than the experiential, since the latter takes account of every feature in each case, the former only of some features. Since the statistical method is one of restricted outlook, requires a very large number of cases, and employs a "quite arbitrary scale of values," it has no theoretical advantages over the experiential method. It has also serious practical drawbacks. Thus it encourages ill-trained workers to fancy that their results, if dealt with statistically, are of value equal or superior to those of trained experts who do not adopt such methods, and leads to the vogue of "the armchair statistician who claims to sit as judge of appeal upon all evaluations of cumulative experiments." We can, therefore, "afford to let all this laborious ineffective striving after the accurate evaluation of cumulative experiments go."

I think the preceding paragraphs contain a substantially accurate account of Sir Almroth Wright's doctrine (although I would again urge the reader to consult the original), and may attempt an examination of it, beginning with his exposition of the statistical method. A word of explanation is, however, due to my biometric colleagues who will protest that such a wealth of quotations was hardly necessary. I must point out, in the first place, that the ordinary educated man untrained in statistical methods must needs be the final arbiter of the merits of the controversy, and in the second place that I have no right to expect even my co-workers to take my word as to the real extent of Sir Almroth Wright's knowledge of statistics without producing documentary evidence. The following paragraphs are intended rather for the general reader than for the trained statistician.

The average reader is therefore informed that statisticians do not necessarily express their final results "in the form of a percentage," nor do they, when several variables are in question, adopt a system of "allotting a certain number of arbitrary marks to each." Thus, suppose we are anxious to measure the respective shares of different possible factors of the rate of infant mortality. It has been said, for instance, that (1) the method of feeding, (2) the fertility rate, and (3) the poverty of the parents are all of importance. In endeavouring to evaluate the relation between changes in these last three variables and changes in the first, the statistician connects changes in the first with changes in all the others in a single equation, called a multiple regression equation. Each term of this equation measures in the appropriate unit (not arbitrarily chosen, but dependent upon the nature of the quantity and its variability) the effect of varying the character in question.[16] In a precisely similar way, the

[15] It would be inferred from this sentence that we may sometimes hope to deduce a law from the result of a single experiment. It would be interesting to know when, as Sir Almroth Wright has expressly told us that a crucial experiment needs repetition. (M. G.)

[16] Greenwood and Brown: Journal of Hygiene, vol. xii., 1912, p. 5.

number of deaths from plague which occur in a village depends, *inter alia*, upon the number of the inhabitants and the length of exposure to infection. The relative importance of these two factors is determined as before.[17] A similar problem is to ascertain the relative importance of size and proximity to means of communication, such as railways, upon liability to suffer from an epidemic of plague.[18] All these examples refer to cases in which the variables can be expressed in terms of a quantitative scale: similar but not identical considerations apply to cases where this is not possible. An instance is afforded by the question, Does the apparently greater chance a well-vaccinated person enjoys of passing successfully through an attack of small-pox depend upon an association between economic or social well-being and efficient vaccination? This problem has also been dealt with by the method of correlation.[19] Indeed, it might be said that such dispute as exists among statisticians with regard to the treatment of non-quantitative problems is not as to the general method, but as to which of its various particular forms should be employed in any given case.

I have cited a few of the first examples which occurred to me; many others might be given, but it is vain to multiply instances in refutation of a charge which the most cursory examination of statistical journals, or even of an elementary text-book, proves to be ridiculous. To say more on this might give point to the scornful question—

> ..... usque adeone
> scire tuum nihil est, nisi te scire hoc sciat alter?

We accordingly reach the result that the "restricted outlook" of the statistical method exists only in Sir Almroth Wright's imagination.

We next pass to the charge that the statistician supposes or suggests that the adoption of his method places workers of varying technical skill upon an equality. I may point out that this accusation was, in effect, preferred against White and myself in connexion with the opsonic inquiry. I have already put before the reader as fair an account as I could of that controversy, and will merely ask the following questions.

1. Does Sir Almroth Wright suppose that the astronomical observations of "experts" and amateurs are of equal value?

2. Does he suppose that Gauss believed the adoption of his methods of measuring errors of observation and personal equation put all observers on an equality?

3. Do modern astronomers consider that they can "afford to let all this laborious ineffective striving after the accurate evaluation of cumulative experiments go"?

The rôle of authority in science is, however, far too important a point to be passed over without careful consideration, and it is in this connexion that Sir Almroth Wright brings his most effective *ad captandum* charge against the statistician. In these days most educated men have some idea of the elaborate technic, the familiarity with the use of complex apparatus, the patience and the acumen which go to produce even a small piece of bacteriological work. We may go further and assert that many people have vivid experience of some sudden attack of illness in themselves or one of their families. A skilled medical man has been called in, has examined the patient, and pronounced a judgment which has been verified to the last detail by subsequent events. Perhaps they have questioned him as to his reasons and the replies have seemed trivial or unintelligible. Yet the event has borne out the expert's judgment. To one having passed through such an experience the trained medical expert must indeed seem the hero—

> Cuncta videns magno curarum fluctuat aestu;
> Atque animum nunc huc celerem, nunc dividit illuc,
> In partisque rapit varias perque omnia versat—

and the suggestion that some outsider who has never perhaps entered the walls of a bacteriological laboratory, or treated the simplest of complaints, should presume to say whether a medical expert is or is not justified in the enunciation of a particular conclusion must seem (as in truth it is) monstrous.

But the nature of the illustration just outlined will suggest an important distinction. It is the distinction between grounds of *proof* and grounds of *action*. Let me try to explain this. I am, let us suppose, a man of education, but no medical training, and a child of mine is taken ill with abdominal symptoms. I call in my family medical attendant and he says: "I think this is a case of appendicitis requiring surgical treatment, and I advise you to have a surgeon to consult with me." I of course agree and he recommends X. X examines the patient and says: "This is a case of acute appendicitis. I must operate at once or I cannot answer for the consequences." Perhaps I ask for more information, and he says: "There is pyrexia, muscular rigidity, tenderness at McBurney's point, nausea, and vomiting; further, your medical attendant tells me that the child has had a similar but milder attack before, and experience teaches me that in the case of second attacks immediate operation is the proper course." Most of this will be entirely unintelligible to me, but I shall reflect that (1) my medical man, who has always seemed an able man, advised me to consult X; (2) I have heard X well spoken of by people I could trust; (3) I do not follow X's reasoning, but if he is right, and I do not let him do what he proposes, the child will perhaps die. The conclusion emerges that I ought to follow X's advice—that is to say, the competence of X, the only matter respecting which I have evidence, is sufficiently established to form a ground of action for me.

The state of affairs is very different if the question be no longer what should be done in a specific case, but what is the cogency of the reasons which justified X's action in that case. Experts are agreed that not all patients with the signs and symptoms enumerated have really got appendicitis, and that not all victims of a second attack of appendicitis die when untreated. It is not *certain*, therefore, that X was correct. How are we to estimate the probability of his being so? Suppose that X obstinately confines himself to the argument that his experience and that of fellow experts prove that his opinion would be correct in the vast majority of such cases, then the non-medical scientific man is permanently deprived of any ground of *proof*. It is likely, is indeed of everyday occurrence, that he will now fall into the error, mentioned by Sir Almroth Wright, of comparing things not *in pari materia*. He will note the utterances of X with respect to other matters, say votes for women, and if he finds that X talks nonsense or draws illogical inferences with respect to that question, the *materia* of which is non-medical, may hastily conclude that X's surgical inferences are not better founded. But not only is the non-expert destitute of valid grounds of proof; the expert is in hardly better case. He cannot be sure that he attaches the same meaning to the words "great majority of cases," "consensus of opinion," "teaching of experience," as another expert. He is unable to fulfil the requirement of a valid scientific inference—viz., that it is such as "could be drawn by every logically trained normal mind if it were in possession of the conceptions upon which the inference has been based."[20] Are we, then, to conclude that the probability of X's opinion being correct cannot be made the subject of scientific investigation? The fact that surgeons are in the habit of publishing statistics of results would seem to suggest that such is not their own opinion. But from the moment this course is adopted the attitude of the non-medical seeker after truth is altered. He may, perhaps, allow that the selection of *materia*, whether it be or be not made upon good grounds, is beyond his judgment, but he will hardly bear to be told that one mistaken diagnosis in twenty is equivalent to certainty, and that any hesitation to admit this is tantamount to permitting the armchair statistician to lay down the law respecting medical problems. We now see the fundamental confusion of thought which prevails as to grounds of proof and grounds of action in some medical minds. If it be said that a twenty to one chance in his favour was an adequate ground of action to X and that such a grade of probability is the highest which can be expected to occur in practical medicine, no immediate reply can be given. An answer to the first part of the question depends upon an evaluation of the consequences which may be expected to follow upon the doing or not doing that which depends upon the correctness of the conclusion. The second part necessitates an inquiry as to the grade of probability in medicine which does in fact pass for certainty. For instance, is the

[17] Greenwood: Ibid., vol. xi., 1911 (Supplement), p. 62.
[18] Greenwood: Ibid., p. 47.
[19] Macdonell: Biometrika, vol. i., p. 375, and vol. ii., p. 135.
[20] Pearson's Grammar of Science, Part I., p. 56.

probability of a patient with unrelieved strangulated hernia dying about 20 to 1 or more? These fanciful illustrations will have served their turn if they have suggested that the sphere of medical authority is in need of definition. In particular, it is plain that we should be vouchsafed more light upon the questions as to how a "difference of opinion" is ascertained to be "serious" when a majority becomes a "practical consensus," and just how far the "qualifications" of a medical expert extend. It is disappointing to find that a qualified arch-expert like Sir Almroth Wright has so little to tell us on these points. Perhaps, however, a discussion of them is reserved for another paper, which will also explain how the non-expert proceeds to "appraise the relative weight of the authorities who are ranged over against each other." But, it will be said, does this leave the withers of the statistical "expert" unwrung? Has not a distinguished epidemiologist spoken despairingly of an attempt to "decipher the meaning lying hidden behind the hieroglyphics constituting the chief means of expression in the literature (if we may venture to call it such) of the biometricians"? The answer is sufficiently simple. The biometrician, *qua* biometrician, *discloses the data upon which his conclusions rest, the methods by which he has analysed them, and the conclusions which, in his opinion, may be drawn.* He does not appeal to the experience of statistical experts, nor found conclusions upon a (practical) consensus of (qualified) opinion. It is open to any reader to study his paper or not to study it, to decipher the hieroglyphics or not to decipher them. To gibe at the assumption of authority by statisticians because one has not troubled to master their notation would be as reasonable as to charge v. Kries with attempting to set up as a physiological dictator, and to promulgate dogmas because he writes in German, if the critic does not understand that language. There is a little more to be said on this matter of statistical authority, but it can be reserved for a later section. The general bearing of Sir Almroth Wright's charges against the statisticians has been, I hope, elucidated, and I submit to the reader's favourable notice the following propositions.

1. Sir Almroth Wright's analysis of the statistical method is imperfect, and based upon ignorance of current biometric work, as set forth in scientific journals and text-books.

2. The claim of the medical expert that he alone is competent to say what his experiments do or do not prove is not merely unscientific, but anti-scientific. The *prima facie* reasonableness of such a claim is due to a confusion between grounds of action and grounds of proof.

3. It is of the essence of science to disclose both the data upon which a conclusion is based and the methods by which the conclusion is attained. No observer who fulfils these conditions can be accused of unwarrantably assuming authority.

4. The requirements of the last proposition are fulfilled by those biometricians who have investigated medical problems and Sir Almroth Wright's charges against them are consequently unjust.

We are now in a position to inquire whether the experiential method as described by Sir Almroth Wright is a trustworthy instrument of research.

The "Experiential" Method.

The essence of the experiential method is that *all* the significant features of every case have been taken into account by the expert observer, "we can feel confident that no significant factor has been excluded from consideration, and that, as far as possible, credit has been given for every such factor." The method is again particularised in the following terms:—

> When we employ it we let the two separate streams of experience which correspond to the twin series of substantive and control experiments filter through our minds and then compare the impressions which have been imprinted. While no complete account can be given of the psychological processes by which this comparison is carried out the two following points may be noted.
>
> When we bring into application the experiential method we take into consideration every feature of each case, and not, as in the case of the statistical method, only one selected feature—in other words, the *experiential* is a method of *unrestricted*; the *statistical* a method of *restricted outlook*. And the mental record upon which we proceed need not be inaccurately kept or blurred. When, for instance, we obtain in a succession of consecutive cases one and the same result, each succeeding case will render more distinct the impression made by the preceding case; and when a case which is at variance with a series of previous cases turns up, it will, by contrast, stand out very clearly in our consciousness.

It would be doing Sir Almroth Wright an injustice to suppose that his remarks are to be taken quite literally. If they were so taken, we should have to believe that the experiential method can only be used by prophets, since it is often impossible for anyone else at an early stage of a research to say precisely what are and what are not significant features of the results. Thus, most people would agree with the following remarks of Schopenhauer:—

> Any kind of important book should immediately be read twice, partly because one grasps the matter in its entirety the second time, and only really understands the beginning when the end is known; and partly because in reading it the second time one's temper and mood are different, so that one gets another impression; it may be that one sees the matter in another light.

Sir Almroth Wright probably means that in any research there will be so many points of similarity to some previous research that an expert is likely to recognise the significant features which present themselves. But even if we rationalise his words in this way, the difficulties by no means vanish. We have to take account of the concluding phrases in the passage cited from Schopenhauer. What is our warrant that the recording machine is constant?

It is the experience of everyday life that the same external stimulus does not always call up the same sensation, and that different stimuli may elicit an identical response. What alchemy of medical experience can free the expert in that science from the ordinary weakness? Surely it is the universal recognition of this which makes a disclosure of the evidence a first principle in non-medical scientific work? We all admit that in any complex of sense impressions there may be some which it is difficult or impossible to place on record, but the fact that we have not within ourselves any constant standard of measuring these fleeting impressions deprives them of logical validity. Of those who trust to such methods we may ask with Berkeley, "Whether men may properly be said to proceed in a scientific method, without clearly conceiving the object they are conversant about, the end proposed, and the method by which it is pursued?"

But, it may be said, the significant features in medical experience, the criteria, are always or mainly such as cannot be characterised in words or, *a fortiori*, invested with quantitative significance. But Sir Almroth Wright himself bears witness against this. Each of the criteria which he instances in the case of phthisis can readily be so expressed. He gives (1) disappearance of bacilli from the sputum; (2) disappearance of pyrexia; (3) gain of body weight; (4) return of patient to full work. If we add (5) adoption or neglect of a certain treatment, it is plain that, in theory, we could, given an accurate written record, obtain a mathematical function expressing the relations subsisting between all the variables. We have, of course, no sort of right to say that the record provided in such a case by the non-expert is of equal value with that furnished by the trained observer; but we have every right to call upon the trained observer to put his records before us. The data are evidently not of so unsubstantial a nature that we have a right to substitute for them the impression they produced at the moment of compilation, since we have seen that such impression is produced upon a recording mechanism responding unequally at different times. We therefore conclude (1) that the so-called method is not in logical strictness a scientific procedure at all, since the results not only may vary from person to person but may be inconstant in the same observer at different times; and (2) that, Sir Almroth Wright himself being the judge, the significant features of a medical experiment are by no means of a character which precludes the employment of methods which involve a disclosure of the grounds of proof.

But little more remains to be said respecting Sir Almroth Wright's methodology. We have only to refer to his allegation that the so-called experiential method has justified itself by results. He cites (1) the employment of sulphur ointment as a remedy for itch; (2) the use of quinine in malaria; (3) the use of salvarsan in syphilis; and (4) the employment of strepto- and staphylo-coccus vaccines in localised infections due to those organisms.

With respect to (1), as Sir Almroth Wright ranks it among the instances of the method of crucial experiments, I need merely refer to my criticisms of his analysis of that method. As to (3) and (4), they belong to recent history, and the many writers who have supported their conclusions by statistics may be allowed to say for themselves whether they

regard their statistics as merely decorative. The case of quinine in malarial infections is, however, not a recent fact. If the general reader consults the works cited below[21] he will find that quinine obtained a permanent place in the therapeutic armamentarium in days when, as Sir Almroth Wright remarks, the employment of a series of control experiments was unheeded. Consequently, if we commit—and Sir Almroth Wright says we do commit—the fallacy of comparing things not *in pari materia*, when we adduce the former unanimity of opinion as to blood-letting as an instance of the danger of accepting a consensus of expert opinion as a guide to truth, Sir Almroth Wright himself commits it when he brings the case of quinine to support his proposition. Naturally, if we marked the successes and neglected the failures, it would be easy to show that random guessing is a sound instrument of inquiry.

This brings me to the conclusion of my analysis of Sir Almroth Wright's contributions to the theory of scientific method, and I cannot do better than express my judgment in a phrase adapted from his own picturesque and forceful vocabulary. I think "we can, therefore, afford to let all this laborious ineffective striving after" the rehabilitation of dogma and expert infallibility go. We must frankly recognise that medicine, in so far as it is a science, is *in pari materia* with every other science, and we must repeat with Karl Pearson that "the day of authority in any branch of science *has* gone by."

I have now, to the best of my ability, submitted the case as I conceive it, to the judgment of the scientific reader. But I recognise that an effective attack is much easier than a defence, and that Sir Almroth Wright is not, perhaps, the kind of writer whom it is least easy to assail. I do not doubt that he has published his remarks in the hope of raising the scientific standard in our common profession, and that he attaches more importance to his constructive work than to his destructive criticism. Animated by his example, I should like to be allowed to devote the concluding passages of this paper to an attempt at indicating the constructive reformation which seems to me needful for the advancement of medical science.

The Method by which a Therapeutic Problem ought to be Investigated.

Let us suppose that the question is whether a certain treatment is of advantage in acute lobar pneumonia. We must first inquire whether the morbid state connoted by the phrase "acute lobar pneumonia" is clinically recognisable. The question is answered in the words of Sir William Osler: "No disease is more readily recognised in a large majority of cases. The external characters, the sputum, and the physical signs combine to make one of the clearest of clinical pictures. The ordinary lobar pneumonia of adults is rarely overlooked."[22]

The next point to be investigated is the variation of fatality in cases not treated by the method under investigation.

(*a*) *Influence of age.*—That the fatality increases with the age of the patient is well known and evidence need not be quoted here. Naturally, in comparing fatalities it will be necessary to correct for age.

(*b*) *Sex.*—The influence of sex is not so marked, but allowance can similarly be made for it.

(*c*) *Secular variations.*—It would appear that these are of minor importance. The following tables contain some evidence on this point.

*London Hospital Experience of Pneumonia in Persons over 10.**

Period.	Cases.	Corrected fatality rate.
1784–1800	235	23·9 per cent.
1814–30	184	31·6 ,,
1831–53	152	21·4 ,,
1854–63	186	19·2 ,,
1864–73	222	22·9 ,,
1874–83	386	26·0 ,,
1884–93	1381	20·1 ,,
1894–1903	1804	23·4 ,,

[21] Haeser: Lehrbuch der Geschichte der Medicin, vol. ii., p. 422. See also Creighton: History of Epidemics in Britain, vol. ii., p. 320.
[22] The Principles and Practice of Medicine, eighth edition, 1912, p. 97.

It also appears that the fatality of hospital cases from different institutions in the same country during the same period varies but little. Thus we have:—

Source of data.	Number of cases (persons over 10).	Corrected fatality rate.
St. Mary's and Charing Cross Hospitals (1897–1906)	647	21·6 per cent.
Guy's Hospital (1902–06)	959	23·5 ,,
St. Thomas's Hospital (1880–90)	442	23·4 ,,
Glasgow Western Infirmary (1900–10)	582	21·4 ,,
London Hospital (1894–1903)	1804	23·4 ,,

* The data upon which these tables are based have been fully analysed in a paper by Lieutenant Candy and the present writer (Journal of Royal Statistical Society, vol. lxxiv., 1911, p. 365).

(*d*) *The influence of social class.*—Evidence capable of being analysed has been sparingly published. The 873 cases recorded by the British Medical Association's Collective Investigation Committee in 1886 show a corrected fatality rate of 17 per cent., which is below the London Hospital rate for the same period. The results of Huss[23] at Stockholm, more than 40 years ago, suggest that the fatality in the Military Hospital was about 7/11ths of the rate obtaining in the General Hospital.

(*e*) *Influence of race or climate.*—We find striking differences in the hospital fatality rates of different countries, the rate at the Stockholm hospital in the "fifties" of last century being far below that recorded for the same period at Vienna or Basel.[24] There is a less striking difference between the recent London figures and those of Chatard from Baltimore.[25]

In view of what has been said, it will be plain that in comparing a series of treated cases with "general experience" attention will have to be paid to the differences noted, all of which can be tested by the statistical method. When a true control series is available, it will still be necessary to allow for race and environment. An inquiry into these points would seem a necessary prelude to an evaluation of the effects of any specific treatment.

These are all questions of great moment, and cannot be answered by appeal either to authority or to the introspective notions yielded by the "experiential method."

Having made due allowance for these difficulties, we shall proceed to compare the rate of mortality in the treated and untreated cases. This will involve a careful sifting of the material, since we must reject such cases as died in consequence of some accident in no way connected with the evolution of the disease. The criteria of exclusion must be defined, and no case excluded without the grounds of such exclusion being clearly stated and the particulars published in full to give others an opportunity of judging the sufficiency of the criterion.

Next, we shall in some cases be able to compare the percentages and determine the probability that such difference as results might be an "error of random sampling." This will by no means complete the task, however, since it might happen that the treatment, although not associated with a significant reduction of fatality, did influence the course of the disease. The features which it is desired to measure having been determined on, we can by the method of multiple correlation endeavour to connect the variations of such features with each other and with those of the therapeutic factor we are studying. Since in general it will be difficult to secure controls and treated samples absolutely alike in other respects, the method of correlation is likely to be required in most cases. We shall, indeed, be fortunate if we are able to "express the final result in the form of a percentage."

I have outlined the process by which, as I think, such a problem may be investigated. The essence of the whole matter is to ask ourselves at every turn—Is the control a real control? What is the probability that such and such an event is due to such and such a cause? There is no intrinsic merit in numbers and percentages or in coefficients of correlation, their value is in aiding us to think clearly and compelling us to express conclusions in a language which all may master if they choose. But the reader will detect

[23] Huss: Die Behandlung der Lungenentzündung, &c., Anger's translation. Leipzig, 1861.
[24] Fismer: Deutsches Archiv für Klinische Medicin, Band xi., 1873, p. 391.
[25] Chatard: Johns Hopkins Hospital Reports, vol. xv., 1910, p. 56.

the weak point, covered by the words, *if they choose*. At the present time few choose to understand the language of statistics, and many attempt to excuse themselves by the assertion that a knowledge of the language is not attainable by the average medical man. This assertion is wide of the truth. During the past few years I have had in my laboratory several workers whose preliminary training in mathematics had been neither greater nor less than that of all qualified medical men. Any of these would bear me out in the statement that a knowledge of statistical processes sufficient to enable one intelligently to adopt the modern methods requires no more application and effort than are necessary in branches of investigation universally admitted to be within the competence of all post-graduate medical workers. I do not mean to suggest that the acquirements necessary for the original investigator in pure statistical theory can be conferred upon everyone. To assert that an ordinarily intelligent man can learn to play a fair game of chess does not mean that Morphys and Laskers are the product of environment alone. The analogy will indeed serve us a little more. In a complex position on the chess-board it may require a master to indicate the right continuation to enable, say, black to win. But the man with an ordinary knowledge of the game will be able to follow the line of play proposed by the master and to satisfy himself of its correctness, or the reverse; he will ignore the confident assertions of those who do not even know the moves that no rational line of play can be laid down in such complex positions, that success is a matter of temperament or personal equation or "experience," &c.

The present statistical "experts" are in the position of the chess master and can afford to ignore the charge of seeking to set themselves up as scientific dictators made by those who do not know the moves. Naturally, if anyone arrogates to himself the rank of a chess master and proclaims that in any given position the right move is such and such, so many people have a fair knowledge of the game that he will soon be found out if he is a pretender. Unfortunately, this is not yet the case in medical statistics, and too much work is either ignorantly proclaimed to be a "mathematical proof" of something or ignorantly dismissed as "futile trifling." The cure for this state of affairs is *to learn the moves*. I rejoice to think that the cure is likely to be adopted, and it is pleasing for the advocates of medico-statistical methods to read the tribute of Sir William Osler paid in words which may fitly conclude this paper: "Karl Pearson's new iatro-mathematical school of medicine has done good work in making the profession more careful about its facts as well as its figures."

Lister Institute.

THE TREATMENT OF PELVIC INFLAMMATION BY AUTO-INOCULATION.

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OF all regions of the body there is probably none in which the most conservative type of surgery possible is more desirable than in the female pelvis, and any method of treatment that can hold out a reasonable hope of avoiding the sacrifice of the female genital organs is surely worthy of the most careful consideration. This is particularly true of cases of pelvic inflammation, as this is a condition which tends to occur in young women in the child-bearing period, whose present and future happiness will depend very largely on the nature and adequacy of the treatment they receive.

It is practically impossible for the inflammatory process to limit itself to any single pelvic organ, but its main stress is frequently much more apparent in one than in another. The observations that I am recording in these preliminary notes on this subject have been made on cases in which the outstanding feature was a bilateral chronic salpingo-oöphoritis with a very definite history of gonococcal infection, and although their number is not yet sufficiently large to draw completely convincing deductions, still the clinical results have so far stood out in such marked contrast to those obtained by the time-honoured methods usually adopted, which sometimes necessitate even the complete removal of the pelvic organs, that I am convinced there must be a large sphere of usefulness for the line of treatment which I have employed. On a subsequent occasion, when I have had the opportunity of making still further investigations, I shall publish in detail the results. In this present article I wish to deal more particularly with the method of treatment and its principles, and to leave for a later date the discussion of the wisest method of applying the treatment according to the dictates of experience.

The principle on which this method is based is that of auto-inoculation. Recent research has confirmed what was before theoretically obvious, that inoculations of the actual offending organisms or their products must of necessity give much more beneficial results than when stock vaccines are employed. The greatest difficulty presented in the treatment of cases of salpingitis by inoculation is to isolate the causative organisms. In a large number of swabs from the vagina and cervix that I have taken a remarkable variety of organisms has been found, and I have been unable to confirm the work of those observers who would attempt to divide the vagina into two definite zones in which the flora are distinct and separate. In a chronic case the gonococcus is very difficult to isolate or even detect, although the history points strongly to its being the causative organism. Again, in 25 cases of supravaginal hysterectomy I have at the operation taken a swab from the cut end of the cervix, and it was sterile both in the direct smear and on culture media in all but two cases. In these two cases the culture gave a growth of staphylococcus albus whose presence was considered to be due to a faulty technique. The difficulty, then, of isolating the offending organisms has proved too great for vaccine-therapy to be of much value at present, and another and less complicated treatment had to be found.

It is now generally accepted that an increased blood-supply to an infected area causes the liberation of an increased quantity of toxins into the general circulation, thus producing an auto-inoculation with the products of the actual offending organisms. So by raising the local temperature of the pelvis sufficiently for a definite length of time an increased blood-supply to the pelvic organs is induced, and an auto-inoculation capable of sufficiently accurate control is effected. The difficulty of isolating the offending organisms is thus overcome. The best results will be obtained by regulating the dose both as regards quantity and time of introduction, the aim being to give the second dose when the negative phase produced by the first is over and the positive phase has been definitely entered upon. By this means we can raise the patient's index to the offending organisms and markedly increase her ability to deal with them and their products. Should we be dealing with a case in which the trouble is dependent on an inflammatory mass due to an organism now dead, the pelvic congestion is still of great value, in that the increased vascularity assists in the absorption of the inflammatory products. These processes will obviously go on side by side. The desired pelvic congestion is easily produced by the heat emanated from several powerful electric lamps, which are suspended from a suitable cradle, which surrounds the patient's pelvis. It is customary in the use of heat baths in these cases to cover the whole of the patient's trunk and limbs. At first I adopted this method, but this is obviously not a rational procedure when the object is to produce a definite congestion localised to the pelvis. The cradle should surround the pelvis only, and the rest of the body and limbs be left uncovered. With the apparatus so arranged the temperature is raised gradually to the maximum the patient can bear, and after a few days a temperature of 180° F. or thereabouts will be reached, and the patient is submitted to this for half an hour at least. When the whole of the body was covered the mouth temperature was found to be raised, and the process was an exhausting one, but with the heat applied only to the pelvis it is usually borne with ease. A maximum thermometer placed in the vagina recorded, even when the bath temperature reached 190° F., an average rise of only 0·5°. This seemed to be a great waste of heat to produce so slight an effect. These observations were also of interest as showing what a slight effect on the deep pelvic structures must be in reality produced by an ordinary hip bath or so-called hot vaginal douche. However, by introducing into the vagina a suitable Fergusson's speculum with its upper end in the posterior fornix and consequently lying almost in contact with

the inflammatory area, and its lower end in direct communication with the bath, it is possible to raise the vaginal temperature very considerably and also the actual temperature of the pelvic structures in the neighbourhood of the pouch of Douglas.

A typical case from my series of readings is that with the bath temperature at 180° F. the temperature of the air in the vaginal speculum was 135°, and a thermometer placed in contact with the posterior fornix was 101·5°, whereas the mouth temperature was 98·8°. Thus a very definite local rise of temperature can be produced, and this must of necessity lead to an increased blood-supply to the part. In this way I hoped to raise the patient's opsonic index to the offending organisms, and that I have definitely succeeded in doing so is shown by the following figures which are given as typical. These opsonic indices have been kindly taken for me by Dr. J. W. H. Eyre and Dr. C. W. Goodhart:—

CASE 1.

	Index to gonococcus.	Control to tubercle bacillus.
Blood taken before bath	0·81	0·86
,, ,, immediately after... ...	0·8	1·00
,, ,, 24 hours ,, ...	1·21	1·04

CASE 2.

	Index to gonococcus.	Control to tubercle bacillus.
Blood taken before bath	1·01	1·13
,, ,, immediately after... ...	0·85	1·08
,, ,, 24 hours ,, ...	1·32	1·15

CASE 3. (In this case a longer and more effective bath was given.)

	Index to gonococcus.	Control to tubercle bacillus.
Blood taken before bath	1·08	1·24
,, ,, immediately after... ...	0·81	1·24
,, ,, 24 hours ,, ...	0·71	1·14
,, ,, 48 ,, ,, ...	1·24	1·26

Case 4 was very interesting and reacted very definitely to the applications of heat. With complete rest in bed following the patient's admission to hospital her temperature rapidly fell to the normal. She was given an anæsthetic and a pelvic inflammatory mass was found, with a retroverted uterus which remained definitely fixed under the anæsthetic. The pelvic organs were freely manipulated, and on the next day the temperature rose to 100·8° F., but soon became normal again. Six days after this the baths were commenced, lasting on the average half an hour and reaching a maximum temperature of 190°. They were repeated daily for 20 days. After the third application the patient felt ill and the temperature commenced to show a six o'clock rise to 102° or thereabouts. The baths were then stopped, and in six days the temperature began definitely to subside, and in eight days the patient began to feel very much better. Subsequent experience has shown that the daily baths were definitely overdosing her, and the following opsonic indices confirm this opinion. After complete cessation of the baths for seven days another was given which lasted just over an hour, and was all the while kept as hot as the patient would bear it.

CASE 4.

	Index to gonococcus.	Control to tubercle bacillus.
Blood taken before the bath	1·41	0·96
,, ,, immediately after... ...	1·34	1·03
,, ,, 24 hours ,, ...	0·98	1·13
,, ,, 48 ,, ,, ...	0·88	0·98

During this time the patient complained definitely of feeling ill in herself. The baths were subsequently omitted for a further period of seven days, and are now being repeated every three days. Clinically, the result is that vaginal examination is not nearly so tender, the pelvic mass has very definitely decreased in size, and the mobility of the uterus is much improved, although it is not yet normal. The application of the heat was always followed by a marked relief from the pain, but the patient volunteered the statement that she did not feel so well in herself. The pain at first returned three or four hours after the bath; now she has only very occasional attacks, and doubtless with further treatment it will as completely disappear as it has done in the other cases.

It is manifestly impossible to control our every-day treatment by opsonic indices. They were quoted to show that the method I have used is capable of producing an auto-inoculation. This work will be continued and extended to other types of inflammatory conditions and a much larger number of cases handled, so that definite clinical evidence can be put forward to show the method of using it to the best advantage, as regards the frequency of the baths—i.e., the number of inoculations—and the duration and intensity of the local application of heat, which will indicate sufficiently accurately the dosage of the inoculations.

St. Thomas's-street, S.E.

ACUTE INTESTINAL OBSTRUCTION DUE TO VOLVULUS OF THE CÆCUM.

BY P. R. WRIGLEY, F.R.C.S. ENG.,
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AND
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INTESTINAL obstruction due to volvulus of the cæcum is so rarely met with that it is advisable to record all such cases. The present case is of interest in that the abdomen had been opened five weeks earlier by another surgeon for acute appendicitis, and we have been able to obtain a few notes on the condition of the cæcum at that operation.

The patient, a female, aged 29 years, had been in good health, except for three attacks of appendicitis, the last being five weeks before the present illness, when she was operated on and her appendix removed; the wound was sutured without drainage. From this operation she made an uneventful recovery, and left the hospital in two weeks' time

The history of the present illness is as follows. She was seized with acute abdominal pain in the region of the umbilicus, followed by vomiting and profuse diarrhœa. She stated that she vomited greenish fluid and was purged every few minutes, but had not passed flatus for some hours. Twelve hours after the onset of the attack she was admitted to the Manchester Royal Infirmary. On admission she looked extremely ill, her features were pinched, and her tongue was dry and furred. Her temperature was 100° F. and her pulse-rate 114. On inspecting the abdomen it was found to move freely with respiration, and a large mass of the size of a cocoanut was seen in the right iliac and umbilical regions, and in this situation waves of peristalsis occasionally occurred. Palpation of the abdomen induced vomiting, which, though not fæcal, was suggestive. There was a little involuntary rigidity and extreme tenderness of the abdominal wall on palpating the swelling, which was tympanitic on percussion. Rectal examination revealed great tenderness on the right side of Douglas's pouch. A diagnosis of intestinal obstruction was made and immediate operation proceeded with.

Operation was performed on Feb. 14th, 1912. An incision about three inches long was made through the sheath of the right rectus internal to the scar left by the previous operation, the fibres of the rectus separated, and the abdomen opened. Numerous distended coils of small intestine presented, and there were many adhesions between these, the omentum and the peritoneum in the vicinity of the old scar. The adhesions were separated and ligatured. Further exploration with the hand in the abdomen revealed a large, tense swelling in the middle line of the abdomen; by a little manipulation the swelling was delivered on the surface of the abdomen and seen to consist of an enormously distended cæcum, and a considerable part of the ascending colon rotated anticlockwise around its long axis one complete twist, and then acutely flexed, so that the cæcum was lying transversely in the abdomen with the fundus of the cæcum just beyond the middle line above the brim of the pelvis. The cæcal wall was very thin, and presented several gangrenous patches, making it useless to attempt to unravel the volvulus, so, after packing carefully round with gauze swabs, the whole of the cæcum and part of the ascending colon, with the terminal portion of ileum, were resected between clamps, the mesentery ligatured, and the diseased bowel removed; the free ends of the ileum and the ascending colon were then crushed by a large Spencer Wells forceps and

closed by a stout ligature of linen thread, and each end inverted by a purse-string suture of linen thread. A lateral anastomosis was then made between the terminal portion of the ileum and the ascending colon by continuous thread sutures. The gauze swabs were then removed and the operation area cleansed. The anastomosis was returned into the abdomen, which was closed by a continuous catgut suture through the peritoneum and a similar suture through the anterior sheath of the rectus reinforced by stout silkworm-gut sutures, including the whole thickness of abdominal wall except the peritoneum.

The patient made an uneventful recovery, the bowels being moved naturally on the sixth day after operation. The wound healed by first intention, and she left the hospital on the twenty-first day. The resected portion of bowel measured 18 inches long by 12 in width. It was dark grey in colour, and showed many small patches of gangrene which appeared on the point of perforating. The patient has been seen some months later, and was in good health.

Remarks.—Corner and Sargent, who analysed 57 cases of volvulus of the cæcum, recognise three anatomical varieties: 1. Where there is a mesentery common to the small intestine, cæcum, and a portion of the colon; in this variety volvulus takes place round one fixed point, which may be regarded as the superior mesenteric vessels. 2. When the mesentery of the terminal portion of the ileum is shorter than that of the rest of the ileum and that of the cæcum. In this case there are two fixed points. 3. In which rotation of the cæcum takes place around its long axis. Axial rotation always accompanies the two former varieties, but may exist alone, and then the cæcum is dilated into pouches as a consequence of stasis in the cæcum, and this condition is regarded by these authors as evidence that this variety is acquired, and they show evidence that volvulus of the cæcum is often sub-acute or chronic in nature, giving rise to repeated attacks of mild obstruction which suddenly subside. It appears possible that in the case recorded above the previous attacks were not necessarily appendicitis, or that this was a secondary factor produced by partial volvulus which subsided. The notes taken at the previous operation for appendicectomy state that attention was drawn to a large pendulous cæcum hanging down towards the pelvis with strong peritonitic adhesions around. The appendix was elongated and inflamed. No note was made of the condition of the mesentery, but the specimen showed no abnormal peritoneal relations, and we are inclined to regard this case as one of the acquired variety described by Corner and Sargent. The rotation of the cæcum is always anticlockwise, and never clockwise, as it may be in volvulus of the sigmoid. The explanation of this is found in the fact that in the development of the large intestine and its peritoneal relations, the cæcum undergoes a half rotation in the axial plane in an anticlockwise direction. We are indebted to Mr. Charles Roberts for permission to make use of the notes of the first operation.

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OCULAR MYOCLONUS.

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I HAVE chosen the simplest possible descriptive title for the case which is here to be related because I do not wish to place it too definitely in any particular pigeonhole of the cabinet of "Tics." Its precise place may perhaps be found by the neurologist, to whom the facts may prove to be of use as a contribution to the elucidation of nervous disease.

The patient, aged 18 years, a printer by trade, and, incidentally and unfortunately, an orphan, from whom no trustworthy family history could be obtained, came to me at the Glasgow Eye Infirmary on Oct. 12th, 1912, with the following statement and complaint. Since birth, as he understood, and at any rate as long as he could remember, he had been subject to attacks of closing of the left eye, associated with headache and sickness. The present attack was one of the worst he had ever had, had lasted a week, and had led him to seek advice. As he put it in the Scotch vernacular, it has "put him off his meat."

I will state the observations recorded during a series of visits he made to the infirmary. The symptoms were much more marked at his first attendance than at any subsequent time. The exhibition of bromide had an immediate relieving influence.

"The left palpebral fissure looks smaller than the right, owing to a permanent slight droop of the upper lid. There are rhythmical contractions of the left orbicularis palpebrarum and occipito-frontalis muscles; the rate is 72 per minute. The orbicularis does not contract sufficiently actually to close the eye, but the upper lid comes down to approximately the half pupil, and the lower lid is drawn upwards, more particularly at its nasal end. The combination of elevation of the skin of the forehead with contraction of the orbicularis gives rise to a very curious facial appearance. Every now and then (i.e., at the first consultation, at which date only was the spasm truly rhythmical) the spasm ceases to be rhythmical and becomes irregular. There is no movement of the muscles about the nose or mouth, and the patient states that there never have been movements of this sort of any other muscles. He states that he has never had double vision. When the patient is not actively accommodating and when the light is not too bright, it is obvious that both pupils contract and dilate in association with the orbicularis-occipito-frontalis contraction and relaxation. It is specially noted that the hippus is not in the nature of a light reflex due to partial covering of the left pupil. If that were the case pupil dilatation would correspond with orbicularis contraction, whereas the pupils contract simultaneously with the orbicularis, and dilate immediately the contraction of that muscle ceases. Ophthalmoscopically there is no indication of spasm of the ciliary muscle. The refraction is emmetropic in the right eye and hypermetropic about 4 D. in the left eye. (V.R. 5/5. V.L. 5/36. No improvement with glasses.) Fundi normal."

On the first examination only, when the spasm was at its highest degree, never on any subsequent occasion, although carefully looked for, there was seen a slight rapid lateral nystagmic movement of the *right* optic disc. It was not observed in the left eye. It occurred coincidently with the orbicular spasm.

Most of the foregoing facts were ascertained at the first consultation and, with exception of the rhythmicality of the spasm and the nystagmus mentioned above, were confirmed at subsequent examinations. The patient was put upon bromide of potassium; at the next visit the spasm had ceased to be rhythmical and had become occasional, much to the advantage of the patient and somewhat to the chagrin of the observer, since it was desired to demonstrate the case.

The case was shown to the members of the Scottish Ophthalmological Club on Nov. 1st, on which date, unfortunately, the spasm was minimal. Several members suggested that there was exophoria and that in the particular illumination (diffuse electric) the left pupil was slightly larger than the right. It was thought from this that there might be some degree of paresis of the third nerve. Subsequent repeated examination showed that the exophoria, at any rate, was not real, the muscular balance being esophoria and right hyperphoria, the error very slight in either direction.

My friend Dr. R. Barclay Ness very kindly examined the nervous system at his wards in the Western Infirmary. He could find nothing abnormal outside of the ocular symptoms. He considered that there was a certain amount of paresis of the orbicularis and occipito-frontalis muscles due to the long-continued spasm.

Subsequent observation has shown that bromide only lessens the intensity and abolishes the rhythmicality of the spasm. The contractions go on from day to day and week to week, sometimes more and sometimes less troublesome to the patient.

I have not been able to go deeply into the literature in search of similar cases. In the meantime I do not know of any observation of the association of the pupil contraction with orbicularis-occipito-frontalis contraction regarded pathologically, yet from the fact that there is a well-known physiological orbicularis-pupil reaction which was first described by von Graefe and afterwards by many others,[1] it seems more than likely that cases have been recorded in which a pathological lesion or a developmental defect

has involved these muscles in simultaneous spasm. However that may be, it is the association of the third and seventh cranial nerves in this case which seems to provide its greatest interest. The seventh nerve of one side is associated with the third nerve of both sides. The once noted right-sided nystagmus shows that more than the pupil fibres may be involved. I say that this association seems to be the most interesting feature of the case, because whether we call the condition a "myoclonus" or whether we call it a "convulsive tic," the exact cause is probably a mere matter of speculation. Lenoble and Aubineau[2] in their lengthened work on myoclonic nystagmus, "Nystagmus Myoclonie," had two post-mortem examinations carried out in the laboratory of Professor Raymond on cases of myoclonic nystagmus which had succumbed to intercurrent disease. In neither of these could any lesion be found to account for the myoclonus.

Now, in explaining the lid-closure reflex, orbicularis reflex, Westphal-Piltz phenomenon, or Gifford-Galassi reflex, under which various titles the reaction first described by von Graefe has been designated, two principal views attract one's attention. The one is that of von Graefe, who described it as an accompaniment of a general contraction of ocular muscles excited by contraction of the orbicularis, due to simultaneous excitation of the nuclei of the seventh and third nerves, or, according to Gifford, to an overflow stimulus from the facial nucleus to the oculo-motor nucleus.[1 3] The other view is that the phenomenon is an indication of the truth of the Mendelian theory—namely, that the orbicularis and occipito-frontalis are eye muscles, and are really innervated by the third nucleus *viâ* the seventh nerve.

We may therefore ask ourselves whether the present case tends to support the one or the other of these two views as to the lid-closure reflex. Take first of all the view that the orbicularis-pupil reflex is due to an overflow of nerve energy along the posterior longitudinal bundle from the nucleus of the seventh to that of the third nerve. While this seems very plausible when the lid-closure reflex is brought about by forcible closing of the lids against a resistance tending to keep them open—the usual method of eliciting the reflex—and when muscles other than the pupil sphincter supplied by the *third* nerve of one or both eyes are certain to be engaged in the reaction, it does not seem so reasonable to suppose that a mere spontaneous spasm of the orbicularis should cause, not merely an overflow of energy to another nerve nucleus, but should, except when the spasm is at its most severe stage, pick out one particular portion of that nucleus.

It seems more easy to correlate the lid-closure reflex and the facts of the present case in accordance with the theory of Mendel, that the third nerve centre supplies innervation normally to the orbicularis and occipito-frontalis muscles. According to this hypothesis, it is merely necessary to suppose that the cells for pupil contraction and for orbicularis movements lie near together, may act normally together, and may easily be influenced by the same stimuli. Harman[4] has brought forward evidence of a morphological nature to oppose the theory of Mendel. Nevertheless, the present case forms a contribution to the subject which seems rather to support that hypothesis.

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Glasgow.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.—The usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity and Life Assurance Society, was held at 429, Strand, London, W.C., on Dec. 20th, 1912. Dr. F. J. Allan in the chair. During the last few months the claims have been steadily diminishing, while there has been a satisfactory increase in new proposals. The society is run entirely on mutual lines, and the committee is appointed each year from the members, while the profits all go to members. Prospectus and all information may be obtained from the Secretary, Mr. B. Sutton, 33, Chancery-lane, W.C.

A CASE OF

TETANUS TREATED BY INTRAVENOUS INJECTIONS OF PARALDEHYDE AND COPIOUS INJECTIONS OF NORMAL SALINE RESULTING IN CURE.

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ON Oct. 2nd, 1912, the patient, an emaciated, stunted-looking boy, aged 19 years, was admitted to the Khartoum Civil Hospital for some very septic tuberculous sinuses of the neck. He also had a spinal curvature in the cervical region due to old tuberculous disease. On Oct. 4th the patient developed definite signs of tetanus. The neck was very rigid. The mouth could not be opened more than half an inch, and he was seized at intervals of a few minutes with painful spasms involving all the muscles of the body. During these spasms opisthotonos was marked. I had recently read a communication to THE LANCET by Mr. H. L. C. Noel and Mr. H. S. Souttar[1] describing the effects produced by injecting paraldehyde and ether intravenously, and I decided to use this method to produce muscular relaxation, combining it with copious injections of saline solution with a view to assisting the elimination of the toxin. At the same time the sinuses were laid freely open and the activity of the bowels attended to.

On the 4th at 11 A.M. a solution of paraldehyde and ether, 5 c.c. each in 150 c.c. of normal saline solution, was infused intravenously by thrusting a sharp needle through the skin into one of the veins. Deep anæsthesia was produced and normal saline was then administered, and finally another 150 c.c. of the same strength paraldehyde and ether solution was given. In all 2 litres of fluid were passed into the vein. The patient slept till 1.5 P.M., and was then comfortable and relaxed. At 8 P.M. he was again rigid, especially the muscles of the neck and jaw, but he had no muscular spasms and slept through the night. On the 5th at 7 A.M. his condition was much the same as on the morning of the 4th. A solution of paraldehyde and ether, 15 c.c. of each in 150 c.c. of saline, was injected. The patient became relaxed in a few seconds, and in two or three minutes became deeply unconscious. He was then given 850 c.c. of saline solution, and as by this time he had recovered his corneal reflex, he was given 150 c.c. of saline containing 5 c.c. each of paraldehyde and ether. He slept till 2 P.M. without waking. He was then almost completely relaxed with the exception of his neck and jaw, and took three pints of milk in the course of the afternoon. He slept through the night. On the 6th at 7 A.M. the patient was again rigid, with occasional fits of muscular spasm. 150 c.c. of a saline solution containing 15 c.c. each of paraldehyde and ether were injected. This was followed by saline and finally by 7 c.c. each of paraldehyde and ether in saline. In all two litres of saline solution was given. He slept till 4 P.M. when he woke, took his milk, and was fairly comfortable, but there was still considerable rigidity. At night morphia, ¼ gr., was given, and he slept till the morning. On the 7th at 7 A.M. the patient said he was better, but there was still considerable rigidity. He could not open his mouth more than a quarter of an inch. The neck and back were very rigid, and there were occasional attacks of spasm. 150 c.c. of 15 c.c. each of paraldehyde and ether in saline were given and followed by saline, and finally by another 150 c.c. of the same strength ether and paraldehyde solution, two litres of fluid being given in all. He slept till the late afternoon and then drank his milk. He was given morphia, ¼ gr., and slept all night. His urine was found to contain blood and epithelial casts. On the 8th at 7 A.M. the patient said he was feeling better, and as he was more relaxed he was left till 11 A.M. He was then markedly rigid. His head was retracted and a marked risus sardonicus was present. There were occasional attacks of muscular spasm. The urine was quite normal. Infusion of paraldehyde, ether, and saline exactly similar to that on the 7th was performed. He slept till late in the afternoon without waking. He then took four pints of milk

[1] THE LANCET, Sept. 21st, 1912, p. 818.

and slept all night. On the 9th the patient was very comfortable and complained of no pain. The neck and jaw were still rigid. The mouth could be opened three-quarters of an inch. No infusion or morphia was given. On the 10th at 7 A.M. the patient was much more rigid, risus sardonicus was marked, spasms of muscles of abdomen and back were frequent. It was not at that time possible to infuse with paraldehyde, so morphia gr. 1/2 was injected, but no relief was obtained. At 10 A.M. the symptoms were more marked. He was then infused with paraldehyde and ether in the same quantities as on the 7th and 8th, but on this occasion the proceeding was prolonged owing to the cannula becoming blocked with coagulated blood, and in consequence a further 15 c.c. each of paraldehyde and ether in 150 c.c. of saline were given, making a total of 45 c.c. of each. He slept till 6 P.M., and then took his milk and slept all night. On the 11th at 7 A.M. the patient was comfortable and could turn in bed with some assistance. The neck and jaw were still rigid. At noon he was given 30 c.c. each of paraldehyde and ether in 300 c.c. of saline solution, followed by saline, and finally 10 c.c. of paraldehyde and ether; in all one litre of fluid was given. He slept till 10 P.M., awakened, took his milk, and slept all night. On the 12th he was considerably better. He could turn in bed without assistance and could open his mouth wider. The paraldehyde infusion was now discontinued and a mixture of chloral and bromide was ordered to be given two-hourly if awake. Owing to the improvement in his condition the chloral and bromide mixture was only given twice a day and was discontinued after three days. On the 19th he was quite free from all symptoms except that the mouth could not be opened fully. On the 20th there were no tetanic symptoms. The boy's general condition was improving. On Nov. 10th the tuberculous sinuses had all healed. The boy was fat and well nourished, and was discharged.

I have ventured to record this case as the number of cases of tetanus of any severity that recover is still small. The object of the paraldehyde infusion is to preserve the patient from the rapid exhaustion which is entailed by the muscular contractions and the intense pain, while the body, aided by other remedies, is given time to eliminate the tetanus toxin. This object is admirably served. This patient suffered very little of the pain which is usually suffered by tetanus cases, and from the 4th to the 12th, during which time he was suffering from tetanic symptoms, his strength and nutrition were well maintained. While still under the relaxing influence of the paraldehyde he was able to take nourishment freely.

The special advantages of this method of treatment appear to be: 1. The anæsthesia is induced with extreme rapidity. Within a few seconds from the introduction of the needle the muscles become relaxed and no further pain is experienced. The patient gives one or two yawns and complete anæsthesia supervenes. 2. The drug not only acts as an anæsthetic, but also as a hypnotic, and after the period of definite hypnosis has elapsed there still remains a period of relative muscular relaxation lasting several hours. The pain caused by the introduction of the needle is so momentary that it need hardly be reckoned with. A muscular spasm is of necessity caused, but it is almost at once relieved by the relaxing effect of the paraldehyde. On two occasions, however, owing to failure to introduce the needle easily, chloroform was resorted to to enable the needle to be introduced. The patient had very small veins, and towards the end of the eight days the introduction of the needle was not always easy.

With regard to the appearance of blood and epithelial casts in the urine on the 7th and its complete absence on the 8th and subsequently I can offer no explanation. Under the circumstances I decided to disregard it.

I was much impressed by the value of this treatment in affording the patient unbroken sleep for many hours, followed by a period of relaxation and comfort, during which nourishment could be administered and the nursing, &c., of the patient attended to. On a future occasion, however, I should commence at once with the larger doses so as to ensure as complete rest as possible. In conclusion, I should like to acknowledge the able assistance afforded me by Dr. Iskander Eff. Sarkis, one of the resident medical officers at this hospital.

Khartoum.

NON-SYPHILITIC ARTERITIS OBLITERANS ("THROMBO-ANGEITIS" OF LEO BUERGER),

WITH INTERMITTENT CLAUDICATION OF THE LEFT LOWER EXTREMITY.

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THE patient,[1] a Russian Jew, now aged 47 years, presents the characteristic symptoms of the type of chronic arteritis obliterans which in Germany, England, and America has been chiefly or almost exclusively observed in male Jews between 30 and 52 years of age who have emigrated from Russia. Syphilis apparently plays no essential part in the etiology of such cases, and the real cause of the vascular disease remains unknown, though tobacco smoking may be suspected of being a contributory factor. Most of the patients have been free cigarette smokers, and many of them have been employed in cigarette factories, where they could obtain cigarettes without paying for them. The characteristic symptoms of the disease, as illustrated by the present case, are: (1) Redness or cyanosis of the foot when it is allowed to rest in a dependent position; (2) pallor of the foot on movement of the ankle-joint; (3) intermittent claudication, with feeling of cramp or pain in the muscles of the calf or instep on walking for a few minutes (Walton and Paul have termed this "angina cruris" when, as in most cases, one of the lower extremities is the part affected); and (4) absence of pulsation in the arteries of the foot, notably in the dorsalis pedis artery. In the present case the symptoms are of nine years' duration, and the patient has been shown before the Clinical Section of the Royal Society of Medicine on Dec. 13th, 1907, and Jan. 14th, 1910.[2]

The case has now been again brought forward to show that the condition of the affected limb is certainly no worse than it was in 1907, although the arterial affection was for some time (in 1909 and 1910) complicated by superficial phlebitis, as in several other recorded cases, especially those described by Leo Buerger under the title "Thrombo-angeitis obliterans." In the amputated leg from a similar case (1904) I found in one of the sections of the affected vessels that both the artery and one of the veins accompanying it were occluded by organising thrombi—a fact which shows that the venæ comites of the arteries may be likewise affected, and may be affected when the superficial veins are apparently unaffected.

In the present case the disease has been rendered more severe by the occasional occurrence of chronic "ischæmic" ulcers. Such "ischæmic" ulcers, when they occur in cases like the present one, give rise to severe local pain and tenderness, which keep the patient awake at night, like the pains of commencing dry gangrene of a limb; and, unfortunately, unlike the typical cramp-like muscular pains of the intermittent claudication, they cannot be avoided by keeping the muscles at rest, though they necessitate prolonged confinement to bed and the use of opiates, such as pantopon. In this class of cases Nature endeavours to establish a *capillary* collateral circulation in default of sufficient *arterial* collateral circulation, and that accounts for the hyperæmia and turgidity of the affected foot when it is allowed to hang down, a condition which has been confused with "erythromelalgia" of nervous origin. This explains why dilating the blood-capillaries in the foot by the temporary application of negative pressure (apparatus after Professor Bier), or by the local application of warmth, or by allowing the foot to hang down, may temporarily ease the pain and ultimately increase the efficiency of the capillary circulation in the part.

In regard to treatment, besides prolonged rest in bed (which is absolutely necessary in the bad cases, especially when there is any ischæmic ulceration) and the application of various methods to induce hyperæmia (by means of apparatus for negative pressure after Professor Bier, and the local application of warmth), and possibly also the use of

[1] The case was shown at the Clinical Section of the Royal Society of Medicine on Jan. 10th, 1913.

[2] See also F. Parkes Weber, THE LANCET, Jan. 18th, 1908, p. 152.

electrical methods, I believe that prolonged courses of iodipin (such as have been employed in the present case) really do exert some beneficial—though not rapid—effect. As local applications to the ischæmic ulcers xeroform, calcium iodide ointment (5 per cent.), Scharlachrot ointment (8 per cent.), and an application containing balsam of Peru with a minute quantity of silver nitrate, seem to be useful.

In some cases the disease becomes quiescent, or is arrested, before the period of "ischæmic ulcers" is reached, and then, although the intermittent claudication may persist, there will not be the dreadful nocturnal pain of threatened gangrene. It is this pain, if not the commencement of actual gangrene or septic infection of the part, which is specially likely to call for amputation; but the present case shows that occasionally a patient may safely pass through the painful period and escape amputation for several years at least.

I have had the opportunity of seeing a good many cases of the same affection amongst the poor Jews (from Russia) of the East End of London, but in only one case have I seen it in a Jew of the well-to-do classes. The patients are all males and apparently free from syphilis. In the present patient the blood serum was twice examined at the Lister Institute (1910 and 1911), and on both occasions was found to give a negative Wassermann's reaction for syphilis. In some cases amputation has been necessary, but in other cases the affection seems to become quiescent. In two cases in which both lower limbs were badly affected (amputation on both sides necessary), the radial artery in one of the upper limbs was found to be obstructed and pulseless, though no definite circulatory or other symptoms had been as yet caused thereby.

In regard to diagnosis, it must be remembered that the single symptom expressed by the term "intermittent claudication," in one or both lower extremities, may undoubtedly occasionally occur in the apparent absence of any organic arterial disease sufficient to account for it. Apart from Déjerine's cases of "intermittent spinal claudication,"[3] in a few cases the intermittent claudication of the lower extremities has been supposed to be due only to angiospasm (H. Oppenheim,[4] H. Curschmann,[5] and others), and in a few other cases no satisfactory explanation of the symptom can be obtained (by ordinary clinical methods of examination). Oppenheim[6] has found intermittent claudication combined with neuroses or psychopathic conditions, and occurring in persons in whom the stigmata of degeneration—e.g., medullated nerve fibres in the retinæ, malformed fingers, &c.—pointed to the congenital disposition, and he says that his experience has been confirmed by Goldflam, Higier, Idelsohn, and others. In this connexion it may be noted that a son of the present patient is a well-grown lad of 20 years, but since the age of 6 or 7 years he has suffered from attacks of headache and vomiting, recurring about every four to six weeks on the average. He (the son) also has slight chronic enlargement of the spleen, and his blood-serum, when tested in July, 1911, gave a negative Wassermann's reaction for syphilis (von Dungern's modification).

One feature in the present case is, perhaps, worthy of special attention. In my account of 1907[7] I described it in the following words: "If the patient then forcibly flexed and extended the ankle-joint a few times the skin of the foot, in less than a minute, lost its congested look and became blanched and alabaster-like." This phenomenon may still to some extent be observed. A somewhat similar blanching of the hands on movements was noted by Oehler in a case of "intermittent dyskinesia of the arms,"[8] and Erb[9] has proposed to call the phenomenon in question "Oehler's symptom." I have likewise alluded to the symptom elsewhere,[10] and S. Goldflam, of Warsaw,[11] has specially directed attention to it. The symptom is, however, in some cases very little noticeable, or apparently absent. In some cases it may be rendered more definite by first immersing both the patient's feet in a hot foot-bath so as to produce a preliminary artificial hyperæmia.

Harley-street, W.

[3] See Déjerine, Presse Médicale, Paris, 1911, vol. xix., p. 981, and Déjerine's earlier papers of 1906 and 1909 on the subject; P. Sollier, ibid., 1906, vol. xiv., p. 677; F. F. D. Reckford, American Journal of Medical Sciences, 1912, vol. cxliv., p. 721; S. Gavazzeni, La Clinica Medica Italiana, Milano, 1907, vol. xlvi., p. 165; and G. Poggio, Gazzetta degli Ospedali, Milano, 1908, vol. xxix., p. 138.

[4] H. Oppenheim: Text-book of Nervous Diseases, English translation by A. Bruce, 1911, p. 587.

[5] H. Curschmann: Münchener Medizinische Wochenschrift, 1907, Band liv., p. 2519.

[6] Oppenheim: Op. cit., p. 586.

[7] Proceedings of the Royal Society of Medicine (Clinical Section), vol. i. p. 44.

[8] Oehler: Deutsches Archiv für Klinische Medizin, Leipzig, 1907, Band xcii., p. 154.

[9] Erb: Münchener Medizinische Wochenschrift, 1910, Band lvii., p. 1182.

[10] F. Parkes Weber: Proceedings of the Royal Society of Medicine (Clinical Section), 1910, vol. iii., p. 97; (Neurological Section) 1908, vol. i., pp. 50 and 102.

[11] See Goldflam's remarks on this subject in the Münchener Medizinische Wochenschrift, 1910, Band lvii., p. 1747.

GAPES IN MAN, AN OCCASIONAL HELMINTHIC INFECTION:

A NOTICE OF ITS DISCOVERY BY DR. A. KING IN ST. LUCIA.

BY R. T. LEIPER, D.Sc., M.B. GLASG., F.Z.S.,

HELMINTHOLOGIST TO THE LONDON SCHOOL OF TROPICAL MEDICINE.

ON the day of my departure from London for West Africa I received a tube containing what appeared at first glance to be a portion of a fairly stout filariform worm bifurcated at one end as if the genital and digestive tubes were protruding from a damaged part. Accompanying the specimen was a letter from Dr. Alex. King, Castries, St. Lucia, West Indies, giving the following details regarding the source of the material: "The history is as follows. Patient, an Irish woman, aged about 40 (14 years in the tropics, always in St. Lucia), complained of slight chronic cough. She had no abnormal physical signs in her chest. One day, being about to cough, she put her handkerchief to her mouth, and on taking it away noticed what she took for a streak of blood on the handkerchief. On further inspection the streak was seen to be alive. When I got it, it was full of blood. It seems to be really two worms, but we have not separated the two pieces. The sputum shows no eggs, no tubercle bacilli, only many catarrhal cells. Since expelling this worm the patient's cough has, she says, almost disappeared. The worm is preserved in 50 per cent. alcohol."

As the worm appeared likely from the history to be of unusual interest I took the material with me. On my arrival in Calabar I immediately examined it with a hand-lens, and at once realised that I had to deal, not with a damaged worm as I had thought, but with a complete and united pair of some species of Syngamus. Not only did the male occupy the highly characteristic attitude upon the female, but the remarkable cuplike mouth capsule could be readily distinguished in both sexes. More detailed examination with the compound microscope showed further that the female was sexually mature and contained eggs in the terminal part of the genital tube. Similar eggs were visible in the mouth capsule of the male, and had undergone some segmentation. Their occurrence suggests the presence of additional worms, although it is just possible that the male had accidentally swallowed part of his own progeny.

It is highly improbable, of course, that this Syngamus is to be regarded as other than a purely accidental infection of man by a parasite common in one of the domesticated animals. One species of Syngamus (S. trachealis) is an exceedingly common parasite in poultry and game birds, but, as I have not access at present to typical material with which to make a careful comparison, I hesitate to declare that the infection to which Dr. King now draws attention is one acquired from infected poultry. I do not recollect a single undoubted instance of the parasitism of a mammal by a normally avian parasitic nematode, and it seems strange that no other case has been noted hitherto, especially in England, where there is an enormous annual mortality amongst chickens from the presence of this parasite, and in view of the pathetic care with which the sick birds are often tended by those dependent upon their successful upbringing. Unless Dr. King has been misled by a neurotic patient, he is to be congratulated highly on his most suggestive and interesting find.

Calabar.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

Exhibition of Clinical Cases.

A MEETING of this section was held on Jan. 10th, Sir WILLIAM OSLER, the President, being in the chair.

Dr. J. D. ROLLESTON showed a case of Diphtheritic Hemiplegia. The patient, a boy, aged 5, was admitted to hospital with very severe faucial and nasal diphtheria on the fourth day of disease. 20,000 units of antitoxin were given on admission, and another two doses of 24,000 units on each of the following days. Cardiac dilatation and irregularity occurred on the sixth day and was accompanied by vomiting, which persisted till the fifteenth day, and by enlargement of the liver. Knee- and ankle-jerks were lost on the twenty-first day. There was a sudden onset of right hemiplegia and aphasia on the twenty-first day. Palatal palsy, shown by regurgitation of fluid through the nose, occurred on the twenty-ninth day, ciliary palsy on the thirty-third day, and pharyngeal palsy, necessitating rectal and nasal feeding, from the thirty-sixth to the fifty-eighth days. Other palsies noted were paresis of rectal and vesical sphincters, and of the diaphragm during the occurrence of pharyngeal palsy. Albuminuria was present from the ninth to the forty-first day. When discharged from hospital, 94 days after onset of hemiplegia, there were some spasticity of the right arm and leg, and slight right facial palsy, extensor plantar response, ankle clonus, and combined movement of trunk and pelvis on the right side. Intelligence was intact, but speech was limited to a few syllables. He could walk with very little support.

Dr. F. PARKES WEBER showed a case of Non-syphilitic Arteritis Obliterans ("Thrombo-angeitis" of Leo Buerger) with Intermittent Claudication of the Left Lower Extremity, published in full on p. 169 of this issue.

Dr. PARKES WEBER also showed a case of Chronic Acholuric Jaundice, with Anæmia, slight Splenomegaly, and Nervous Disorder. This patient was a married woman, aged 43, with a pale sallow complexion and a slight icteric tinge of the conjunctivæ. There was no emaciation. The spleen could be felt just below the costal margin during inspiration, but was evidently only slightly enlarged. The liver was apparently not enlarged. The fæces were normally coloured. The urine contained urobilin, but no bilirubin. Blood examination: hæmoglobin, 55 per cent.; red cells, 4,000,000 to the cubic millimetre of blood; white cells, 4000 (lymphocytes, 16·6 per cent., polymorphonuclears, 83·4 per cent.). Microscopic examination of blood films showed nothing abnormal except very slight anisocytosis and polychromatophilia. The resistance of her red blood corpuscles towards graduated hypotonic solutions of sodium chloride was normal. The blood serum gave a negative Wassermann's reaction for syphilis. The anæmia was rather more marked two months ago before chalybeate treatment. The patient somewhat resembled a case of paralysis agitans in her gait, shakiness, and facial immobility. Loss of vision was her chief complaint, but ophthalmoscopic examination showed nothing abnormal, and her sight varied so much from time to time that the ocular symptoms were perhaps entirely of functional origin. There was no nystagmus, and her pupillary reactions were normal. Her knee-jerks and Achilles-jerks were greatly exaggerated, and there was a tendency to knee and ankle "trepidation," as in many functional nervous cases. Her plantar reflexes were of the flexor type, but exaggerated. Her sensation was normal. She said that she sometimes saw double. Since about September, 1911, according to her own account, she had had an unsteady gait, and first noticed the shakiness in her upper extremities about six months later. She had complained of loss of sight since about July, 1912.

Dr. W. ESSEX WYNTER showed a case of Acholuric Jaundice after Splenectomy. It was that of a woman, aged 22. This patient had been shown to the section on Nov. 8th, jaundiced, as she had been in varying degrees since birth, and exhibiting a large hard spleen which caused dragging pain in the left side. After three weeks' stay at Clacton splenectomy was performed by Sir J. Bland-Sutton on Dec. 11th, 1912. The incision was nearly vertical, about 2 in. to the left of the middle line. The spleen was much enlarged, weighing 3 lb., and showed a deep sulcus due to the gastro-splenic omentum, simulating the hilum. All the mesenteric attachments were clamped and divided, the vessels being at once ligatured. The spleen was then removed. Not more than 2 oz. of blood were lost, chiefly from the spleen itself. The under surface of the diaphragm was found healthy and free from adhesions. The incision was approximated with "through-and-through" stitches, three buried sutures being left. Recovery was rapid, temperature varying from 99° to 100° F. for a week and then remaining normal. Jaundice, which had diminished during the stay at Clacton, had been entirely absent since the operation, and the pains in the left side had disappeared. The blood condition had considerably improved.

Dr. FILIP SYLVAN showed two cases of Pulmonary Tuberculosis before and after Gymnastic Treatment. 1. The patient was a man, aged 37. Eleven years ago he had very severe subacute pneumonia, and some time after this he had very severe hæmorrhages, so that his life was despaired of. In 1902 he was three or four months in Ventnor Sanatorium. He was away from work one year and three months. Since then he had never been well; coughed all the year round, and expectorated chiefly in the morning. Vital capacity, 2200 c.c. 2. The patient was a man aged 31. About 13 months ago he began to feel weak and had a hæmorrhage (about a teacupful of blood). Last October he had another hæmorrhage and went to Brompton Hospital, where the diagnosis was pulmonary tuberculosis of the upper lobes (both sides). Tubercle bacilli were found in his sputum. On Nov. 26th, 1912, he started gymnastic treatment. Over the upper part of the right lung there was dulness on percussion; over the upper and middle lobe, crepitation; over the lower lobe, prolonged expiration; over the upper part of the left lung, dulness on percussion; upper lobe, crepitation; lower lobe, prolonged expiration. Vital capacity, 3100 c.c. Jan. 6th, 1913: Vital capacity, 5500 c.c.

Dr. H. D. ROLLESTON showed a case of Actinomycosis of the Liver in a syphilitic subject. The patient, a man who contracted syphilis eight years ago, had a fall on the right side one and a half years ago. About June 1st, 1912, burning pain began in the hepatic region, and about June 10th he noticed a swelling in this situation. On admission there was a firm tumour measuring 3 in. by 2½ in. below the right costal arch, fixed so that it did not move with respiration. There were old scars on the face and neck, and an enormous white serpiginous scar over the front of the chest. The spleen was not palpable. The urine contained albumin. The heart and lungs were normal. As the Wassermann reaction was strongly positive and he had irregular fever, the condition being thought to be gummatous, iodides were given. The tumour softened, and on being incised on June 30th gave exit to pus containing streptothrix mycelium. On July 18th the abscess was opened up and thoroughly scraped. Shortly after this operation there was a small hæmatemesis which contained actinomycotic granules. The patient, who was not very tolerant to iodides, had had various modifications such as iodipin and sajodin, and had also had an autogenous streptothrix vaccine. The liver was much enlarged, and there were scars of sinuses which from time to time discharged pus containing a Gram-positive streptothrix with well-developed clubs; some of the mycelium resembled streptococcic chains. The urine constantly contained albumin, the temperature was irregular, and the liver, which had varied in size, had occasionally shown markedly tender spots, as if from collections of pus.

Mr. JOHN D. MALCOLM showed a case of Nephrectomy for Hydronephrosis 13 years after nephrolithotomy. The patient, a single woman, at the age of 16 had an abscess, which was opened, and discharged for five months, leaving a scar on the back over the right lower ribs. In July, 1898, when aged 28, the kidney was exposed by an incision in the semilunar line. The right kidney was small and normal to palpation. The left was larger and of irregular consistence. By a second incision in the left loin a stone was extracted with much difficulty. A large opening in the pelvis of the kidney was necessary, and even with this the stone broke in two places. By the fifth day all the urine was passing through the bladder and the patient made a good recovery. The health was fairly good until 13 years later, when she

had several attacks of severe pains in the left kidney region, and feared that she had another stone, and on investigation it seemed certain that the ureter was again blocked, probably by a calculus. The urine was normal. On Oct. 27th, 1911, the kidney was again exposed through the left semilunar line by removing the former scar. The right kidney was examined and found healthy. The left kidney was enlarged, and evidently a mere capsule of kidney was left. It was removed very easily. The patient made a good recovery and her health was much better than it had been for many years. The kidney contained a clear fluid, and there was no stone in it. The ureter was healthy except close to the kidney, where the most careful dissection failed to show any communication between it and the hydronephrotic kidney. It seemed clear that a suppurating surface induced by a projection of the rough stone into the upper part of the ureter, which was noted at the operation, healed when the stone was removed, but that a process of gradual contraction had been started which some 12 years later caused an absolute closure of the ureter.

Mr. MALCOLM also showed a case of Removal of nearly Half a Kidney for Partial Hydronephrosis 16 years after nephrolithotomy. The patient, a woman, was operated upon when aged 25. A stone was removed through a loin incision, an abdominal incision being made to examine the other kidney and to assist in the manipulations. The patient made a good recovery and was free from pain for over 15 years. In the summer of 1912 (16 years later) she again sought advice because of a pain in the right kidney region, and in October she brought a stone which she had passed. The pain continued. It was quite different from that felt before the first operation, being a dull, constant ache, whereas the other was intermittent, very sharp, and came and went suddenly. On Nov. 22nd, 1912, the right kidney was exposed and brought out through a loin incision. It lay across the abdomen, and there was difficulty in deciding which was the upper end. One end, believed to be the lower, and the part opposite the pelvis were of normal shape and appearance, perhaps a little elongated. The other end was larger than the healthy part, and evidently consisted of distended hydronephrotic, very thin kidney substance, with the usual lobulated appearance. As the dilated portion of the kidney did not involve the pelvis it was decided to remove it, leaving the healthy part. The removal was effected by a straight cross-section through healthy renal tissue, and this displaced a small stone. An approximation of the kidney substance was impossible until a wedge-shaped piece was excised, after which the renal substance was fairly easily brought together by catgut sutures. Hæmorrhage was arrested by ligatures and by the adjustment of the sutures. The loin was drained, very little urine escaped, and the patient had made a good recovery. It appeared that the small stone had blocked, or partially blocked, the calyces of one end of the kidney, and had caused the partial hydronephrosis. After-histories of cases of nephrolithotomy were not very common, but in his (Mr. Malcolm's) experience they were, so far as he knew, very satisfactory. These cases, therefore, seemed of interest. The removal of half a kidney was believed to be a rare procedure.

Mr. PHILIP TURNER showed a case of Abscess in the Left Lobe of the Liver 10 years after an Abscess in the Right Lobe. The patient, a man aged 38, was admitted to Guy's Hospital on Dec. 19th, 1912, for a pulsating swelling in the left epigastric region. In 1897 he was stationed on the West Coast of Africa. He had several attacks of malaria, but never had dysentery. He then returned to England, and had never since been abroad. In 1903 he had three or four shivering attacks, with pain in the right side, loss of appetite, and sickness, for which he was admitted to Guy's Hospital, under the care of Dr. Frederick Taylor. The patient was then very anæmic and had an enlarged tender liver which extended on the right side 4 inches below the costal margin. Hepatic abscess was diagnosed, and Mr. Arbuthnot Lane opened and drained an abscess which contained 1½ pints of chocolate-coloured pus, and which extended through the whole thickness of the liver. The temperature, which had been raised, fell to normal, and convalescence was uneventful. From that time until November last he continued quite well and strong, and had no illness except a slight attack of malaria five years ago. In the middle of November he had a severe blow in the abdomen from the handle of a brake, which "winded" him, but the effect soon passed off. A fortnight before admission he had a rigor; he, however, continued at work, and had a number of shivering attacks in the next three days. Then pain appeared on the left side and became so severe that he was obliged to rest in bed. The lump was first noticed a week before admission. He had never been jaundiced. On Dec. 19th there was in the left half of the epigastric region a tumour about the size of an orange which formed a visible projection and pulsated so freely that he was considered by some to have an aneurysm. If examined while sitting up, however, though the tumour could easily be felt, the pulsation completely disappeared. The right lobe of the liver did not extend below the costal margin, and on percussion the tumour was dull and continuous with the liver dulness. The temperature was 102° F., and the patient looked very ill. Hepatic abscess was diagnosed and an incision made over the most prominent part of the tumour; the liver was adherent to the abdominal wall, and on incising it a large amount of pus, estimated at half a pint, escaped. A drainage-tube was inserted. The temperature next day was normal and convalescence had since been uneventful. A bacteriological investigation of the pus failed to show the presence of any organism.

Dr. ARTHUR F. HERTZ and Dr. W. JOHNSON showed a case of Polio-encephalo-myelitis associated with Optic Neuritis, Nephritis, and Myocarditis. A boy, aged 12½, was admitted into Guy's Hospital on March 5th, 1912, for paralysis of the left side. This had developed suddenly the same day. The patient had fallen down, and on being picked up was found to have lost the use of his left arm and leg. On admission his pulse was 54 and temperature 97° F. He was semiconscious. He could not move his left arm or leg at all, and there was some weakness on the left side of the face. His right pupil was smaller than the left. Both knee-jerks were present, the left being exaggerated. An extensor plantar reflex, diminished abdominal reflex, and ankle-clonus were present on the left side only. There was some twitching of the right side of the face. Incontinence of urine and fæces was present. The heart was greatly dilated and a loud systolic murmur was heard at the apex, but there was no history of rheumatism, scarlet fever, or previous cardiac disease. The case was diagnosed as cerebral embolism. The patient became fully conscious the next day. A tremor now occasionally affected the right arm and leg. There had never been any rigidity of the arm and only slight rigidity of the leg, but in the course of three days both became completely flaccid and the tendon reflexes disappeared, but the extensor plantar reflex remained. The knee-jerk and ankle-jerk disappeared from the right side also, but there was only a very slight degree of weakness in the right leg. The temperature was now taken in the rectum and found to be 101·2°. The pulse was still very slow, but the cardiac condition was otherwise unaltered. On the 8th complete paralysis of the left external rectus muscle developed. Lumbar puncture showed that the cerebro-spinal fluid was under increased pressure; it contained numerous lymphocytes and polymorphonuclear cells in approximately equal numbers. Definite optic neuritis was present, which was more marked on the left side than on the right. On the 16th some atrophy of the left side of the tongue was noticed. On the 20th marked hæmaturia developed, and the urine contained many pus cells and granular casts in addition to blood. The urine became normal again in about ten days. The patient gradually regained some power in the left leg and to a less extent in the left arm. Slight wasting of the affected muscles took place, but there was no loss of electrical excitability. In the course of the next four months the knee-jerks reappeared on both sides; the knee-jerks and arm-jerks became exaggerated on the left side, on which well-marked patellar and ankle clonus also developed. The plantar reflex remained extensor on the left side. The temperature gradually fell to normal in the course of three weeks. The systolic murmur became less distinct and the heart less dilated. The paralysis of the left external rectus did not disappear until October. When shown the patient had recovered to a very considerable extent. There was still some evidence of optic neuritis, and the left arm was very weak; the left leg was comparatively slightly affected. The jerks on the left side were still exaggerated, and the plantar reflex extensor, The urine was normal, and the heart was normal

except for an occasional faint systolic apical murmur. The subsequent history showed that the original diagnosis of embolism was incorrect; acute polio-encephalo-myelitis seemed a more probable diagnosis. The same toxins which affected the nervous system probably caused the myocarditis and nephritis.

Dr. HERTZ and Dr. JOHNSON also showed a case of Bilateral Atrophy of the Face. The patient was a man aged 26. Two years ago he noticed some puffiness under the eyes, which gradually passed away, but his face, especially the right side, from this time became progressively thinner. This became so marked that his friends thought that he must be consumptive, and he therefore came to hospital. The condition had steadily increased, especially during the last three months. The right side had throughout been the most affected. He felt in perfect health and, except for his face, he was physically very well developed. His chest was normal and there was no evidence of nervous disease. There was no weakness of the facial muscles, all of which reacted normally to electricity. His tongue was unaffected; cutaneous sensibility and taste were normal. It was suggested that this case was of the same nature as the more familiar hemiatrophy of the face, and corresponded with the cases recorded by Wolff and by Oppenheim as examples of "bilateral hemiatrophy of the face."

UNITED SERVICES MEDICAL SOCIETY.

Tactical Employment of Field Medical Units.

A MEETING of this society was held at the Royal Army Medical College on Jan. 8th, Fleet-Surgeon P. W. BASSETT-SMITH, C.B., R.N., the President, being in the chair.

Lieutenant-Colonel G. DOUGLAS HUNTER, D.S.O., R.A.M.C., read a paper on the Tactical Employment of Field Medical Units. In his preliminary remarks, Colonel Hunter pointed out that the instruction of medical officers in tactical operations should consist not merely in the learning of principles but in the application of those principles to the solution of concrete problems. This could be attained in peace by the working out of the disposition of medical units on the map according to definite schemes of attack and defence, by staff rides, and by subsequent conferences to discuss the points raised. As regards the preliminary measures in real warfare, great stress was laid by the lecturer on the importance of intimate coöperation between the Assistant Director of the Medical Services and the Divisional Commander and his staff. The success or non-success of the medical arrangements would depend upon whether the Assistant Director of the Medical Services thoroughly grasped the situation and comprehended the object which the commander had in view. Colonel Hunter proceeded to deal with the drafting by the Assistant Director of the Medical Services of orders as to medical arrangements for insertion in Divisional Operation Orders, and with his subsequent drawing up of Royal Army Medical Corps Operation Orders for issue to the units under his command, and referred his audience to Field Service Regulations (Part I.) for precise information as to the framing of orders. As to the points to be dealt with in Operation Orders for Medical Services, these might be tabulated as follows: (1) The body of troops each medical unit will serve; (2) the times and order of march; (3) the areas allotted to each unit, with limits of frontage if possible; (4) sites of dressing stations (these may be laid down beforehand in operations of defence, but rarely in those of attack); (5) the place to and roads by which field ambulances will evacuate their wounded; (6) site of divisional collecting station; and (7) places to which reports and messages to the Assistant Director of the Medical Services are to be sent. During the actual fighting the Assistant Director of the Medical Services would have to leave the actual collection and removal of the wounded to the initiative of the officers commanding field ambulances and the regimental medical services. He himself must be mainly concerned in coördinating the work of the different units under his command with the requirements of the fighting troops and in endeavouring to maintain the link between field medical units and the clearing hospitals. Whatever method of evacuation should be adopted it was imperative that the field ambulances were cleared, so as to be ready for a further immediate advance after a successful attack. The Assistant Director of the Medical Services or his staff officer should always remain at divisional headquarters so as to receive messages from the medical units and take action on the information as it came to hand. At present the means of communication between him and the officers commanding field ambulances were somewhat limited, and it was hoped that there would be improvement in this respect. The medical units in reserve should be in convenient situations, and the Assistant Director of the Medical Services should always keep in hand as large a reserve as possible to provide for emergencies as they arose. The actual work of the field ambulances and regimental medical services was so plainly laid down in "R.A.M.C. Training" that it needed no elaboration. It should be remembered by medical officers that needless exposure of themselves or the bearers to the enemy's fire was unnecessary and reprehensible. Colonel Hunter closed his lecture by an interesting demonstration of the medical arrangements of the Sixth Division at the battle of Sha-Ho, the situation being treated as if the Japanese troops had been provided with medical establishments similar to those of the British army.

A discussion ensued, in which the following officers took part: Surgeon-General H. R. WHITEHEAD, C.B., A.M.S., Colonel WHIGHAM, D.S.O. (Imperial General Staff), and Lieutenant-Colonel C. H. BURTCHAELL, R.A.M.C.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

Medicine and Liberty.

A MEETING of this society was held at the Royal Devon and Exeter Hospital on Jan. 10th, Dr. R. V. SOLLY, the President, being in the chair.

After the reports of the council and of the honorary treasurer had been read and adopted, the meeting proceeded to the election of officers as follows: President, Dr. C. J. Vlieland; Vice-President, Dr. B. Dyball; Honorary Secretaries (joint), Dr. R. V. Solly and Mr. G. L. Thornton. Dr. Mabel Gates was elected a member of the society.

Dr. WILLIAM GORDON then delivered an address on Medicine and Liberty, taking as his text the words of Buckle, the historian of civilisation in England: "It is, however, certain that men who begin by losing their independence will end by losing their energy." Dr. Gordon said that in the National Insurance Act English medicine had been asked to part with a great measure of its independence. The following questions arose from this demand: 1. What is it that we were asked to part with? 2. To whom were we asked to hand it over? 3. Why had the demand arisen? 4. What must be the consequences of our acquiescence? What was asked of us was the independence of much of our practice at once, of more of it soon, and ultimately perhaps of all of it. He proposed to show that for the fullest perfection of medicine liberty was essential, and that at present English medicine, because of its greater liberty, was foremost in the world. History showed that there had been four great periods of pre-eminent progress in medicine, and that each had been coincident with an age of intellectual freedom. First, the Golden Age of Greek culture in which Hippocrates lived. Second, the late Renaissance, which accompanied the flight of Greek scholars to Italy and the invention of printing, when Venice was Mistress of Padua, round which progress centred, and under whose fostering liberty Vesalius laid the foundations of modern physiology and medicine through his study of anatomy. Third, the period beginning with the work of William Harvey, and culminating in that of Lister, which centred in England, then working out an ideal of popular liberty unknown elsewhere. It was significant that these periods should have centred respectively around sea-going, liberty-loving Greece, sea-going, liberty-loving Venice, and sea-going, liberty-loving England. With the freeing of Holland from Spanish tyranny and of France from that of the Bourbons, a similar progress manifested itself. The fourth, or present, period was but the world-wide expansion of the third. History, moreover, showed that in periods when freedom was restricted decline in medicine followed. After the fall of Hellenic freedom, amidst the decline of Hellenic

literature and art, medicine also declined. In Rome the influence of enlightened Governments with relative freedom of thought seemed especially connected with medical advance, and *vice versâ*. The Arabic period, being one of dominant authority, in spite of the encouragements of princes who fostered every form of art and science, showed little actual achievement; and Salerno, under the autocratic Frederick II., produced no work of enduring value. France, under the tyranny of Louis XIV., was, according to Buckle, notoriously defective in the practice of medicine, while the medicine of Spain remained at a low ebb to the end of the eighteenth century. Thus the lesson of history, however tested, read the same—that for pre-eminence in medical progress pre-eminence in liberty is essential. Passing to the connexion between medicine and liberty in our own time in England, Dr. Gordon pointed out that there were certain departments of medicine which could scarcely be otherwise than under some measure of lay control, but in all of these the tendency was to yield them an increasing amount of independence, and *pari passu* therewith was noted a progressive increase in efficiency. He instanced the Army Medical Department in its release from regimental control, its investiture with military rank and authority, and the institution of a civilian medical advisory committee; the public health service, in its gradual emancipation from the rule of local and personally interested authorities, improved terms of service, and the greater powers given to the Local Government Board and its medical advisers; the medical charities, in regard to which he instanced three remarkable cases within his own personal knowledge in which financial, scientific, and economic proficiency had moved upwards or downwards in strict relation with the share accorded to the medical staff in their administration; and the experience of certain foreign countries where Government interference was much greater than in England, and where sanitation, nursing conditions, and the capability of the average general practitioner were all behind Great Britain. All these facts tended to show that the fullest possible liberty was everywhere and always clearly the accompaniment of the fullest medical efficiency. The demand, therefore, that we should part with our freedom was obviously retrograde and evil. And to whom were we asked to surrender our liberty? Not to a body of correspondingly intellectual and responsible persons, but to committees whose majorities were drawn from the less educated strata of the community. This was the fundamental fact in the greatest crisis through which modern medicine had been called on to pass. Financial details, details of administration, were relatively immaterial. We were asked to sell our freedom to inferior intelligences, to place knowledge under the control of ignorance. Ostensibly this demand was made of us to improve medical attendance on the poor. But if this had been the real reason there must have been no necessity for keeping the National Insurance Bill a close secret from the medical profession, thus excluding expert advice, for the refusal to supply advance copies of the Bill to the profession, for rushing it through Parliament without adequate discussion, and for forcing it on the profession by methods better not characterised, and in spite of protests from every authoritative quarter. The Act, dispassionately viewed in the light of its history, its defective details, and the startling mendacity of its advocates, clearly aimed, not at the improvement of medical treatment for the poor, but at the advancement of a political party and the establishment of a personal predominance. As to its consequences, medical men were by the Act placed under the control of committees exercising punitive powers, composed chiefly of men of lesser culture and training, and drawn from that class that has already proved to the hilt its unfitness for such duties. The duties with which the medical man was charged would leave him no time for relaxation or for scientific improvement. Under such circumstances an adequate supply of efficient medical men could not be looked for. In support of this he instanced the clear history of the Army Medical Service, in which 20 years ago the degrading conditions of service—paradise though they were compared with the conditions that the "panel" would now entail—led to a serious shortage of candidates, in spite of the many social and other advantages and opportunities offered by military life. And in the inevitable degradation of medicine that must ensue, all its branches would share alike—for anyone entering medicine must run the risk of the "panel"; no boy beginning his hospital work could be certain of better fortune—general practitioners, consultants, surgeons, specialists, public servants either in army, navy, or public health, medical teachers and medical investigators, all must clearly degrade in efficiency together. He closed with the following conclusions: (1) There is sound historical and contemporary evidence that the progress of medicine is intimately related with liberty of thought and action; (2) wherever lay control exceeds what is necessary the progress and practice of medicine are impaired; (3) the proposals made in the National Insurance Act are so pernicious that it is the duty of the medical profession to resist them by every legitimate means in its power.

The paper was discussed by the PRESIDENT, Dr. H. DAVY, and Mr. F. W. LANGRIDGE.

Dr. GORDON replied.

HUNTERIAN SOCIETY.—A meeting of this society was held at St. Bartholomew's Hospital on Jan. 8th, Mr. A. H. Tubby, the President, being in the chair.—Professor A. Keith delivered the second Hunterian lecture on "The History and Nature of Certain Specimens Alleged to have been Obtained from the Post-mortem Examination of Napoleon the Great." The lecture will be found on p. 187 of our current issue.—The President showed an interesting portrait of Napoleon when he was in his prime.—Dr. T. H. Arnold Chaplin, whose book on the illness and death of Napoleon we recently reviewed, in proposing a vote of thanks, warmly congratulated Professor Keith on the able way in which the whole subject had been treated, and while he felt that the evidence offered as to the authenticity of the specimens was not sufficient to outweigh the documentary evidence pointing to contrary conclusions, he wished at the same time to express his own indebtedness, and that of the Hunterian Society, to Professor Keith. The lecture which they had just heard, he said, was a most important and notable contribution to our knowledge of the closing periods of the St. Helena tragedy.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held at 49, Leicester-square, on Dec. 17th, when Dr. Morgan Dockrell, the President, was in the chair. The following cases were shown: Rodent Ulcer, Lichen, Iodide Rash, and Purpura, by Dr. J. L. Bunch; one of Leprosy by the President; Pigmentation and Chronic Impetigo, by Dr. W. Griffith; and Seborrhœic Psoriasis and a Chronic Psoriasis cured by an attack of impetigo, by Dr. W. K. Sibley.—A discussion on the Anomalies of Pigmentation was opened by the President, who said that, looking back through the ages, it was seen that great difference of opinion existed in the classification of pigment diseases; that while Hippocrates and Galenus divided them into ephelides, chloasma, and melasma, later on Pleuck said that pigment spots were either lentigines or ephelides, and of the latter there were five groups. Willan and Bateman, however, disagreed with this division, calling all acquired pigmentation ephelides, retaining for the congenital varieties the old term nævus spilus; and further they pointed out that up to their time the confusion had arisen from a want of recognition of a disease they called pityriasis versicolor, which showed a marked predilection for the covered parts of the skin, quite different from freckles, which occurred on exposed parts. Coming to one's own recollection, Erasmus Wilson, who did so much to remove difficulties to the proper understanding of diseases of the skin, fell into the error of dividing chloasma into pigmentary, erythematous, furfuraceous, and pruriginous. To get a clear comprehension of anomalies of pigmentation, the President suggested as the best division that all pigmentary diseases should be divided into hypertrophic and atrophic, and that each of these be subdivided into congenital and acquired. Under hypertrophic the congenital included the different varieties of moles, the acquired being subdivided into lentigo and chloasma; chloasma consisting of, first, idiopathic with its divisions of traumatic and toxic, and, secondly, symptomatic with its divisions of uterine and cachectic. After dealing in detail with these different varieties, he briefly dealt with the atrophic, pointing out that under the congenital, leucoderma represented the congenital and partial, albinismus the congenital and universal, the acquired variety being known as vitiligo.—Dr. Bunch followed with observations on the etiology, and referred to the popular theory as to

the origin of birthmarks through maternal influences on the embryo. He had not been convinced as to the truth of this idea, and mentioned the case of the negress who had black and albino children alternately.—Dr. Griffith made some remarks on the pathology, and dwelt on the histology of the pigmentation.—Dr. Sibley discussed the treatment, and for this purpose divided the cases into two classes, (1) those with a loss of pigment, and (2) those with excess of pigment. In the first group, such as leucoderma, he had been able to bring back the pigment by prolonged hyperæmic treatment of the area. For the removal of excessive pigment he referred to the application of solid carbon dioxide, electrolysis by means of multiple needles, and ionisation, especially with perchloride of mercury, all of which processes are curative for different forms and degrees of localised pigmentary deposit. In the generalised condition, Dr. Sibley discussed the treatment of intestinal stasis.

Reviews and Notices of Books.

Decisions of the English, Scottish, and Irish Courts under the Medical Acts, 1858 to 1886, and the Dentists Act, 1878. Collected for the General Medical Council and arranged, with Introduction and Notes, by CHARLES J. S. HARPER, Solicitor to the Council. London: Constable and Co., Limited. 1912. Pp. 431. Price 10*s.* 6*d.* net.

IN 1897 the General Medical Council printed for the private use of its members and officials the reports of cases in the higher courts in which the exercise of its disciplinary powers by the Council had formed the subject of appeal. Mr. Harper, when directed recently by the Council to prepare a new edition of this volume, found that there were no cases of importance dealing with the decisions of the Council since 1897, but that there was a good deal of matter of a cognate character which might usefully be added to the book in the shape of decisions of the higher courts of England, Scotland, and Ireland upon questions arising generally under the Medical and Dentists Acts. He has, therefore, now included all such cases with the others, prefixing a useful explanatory introduction to full reports reprinted from the *Law Journal* Reports and other accepted records of a similar character, and concluding with a note on certain statutes and cases referred to, and the quoting of relevant sections of the Medical and Dentists Acts. The result is a volume which should in suitable circumstances prove of considerable use to legal practitioners or to medical men desiring to study the law affecting the discipline of their profession and the position of unqualified medical and dental practice. The full manner in which the reports are given adds to the historical interest of the volume, for it enables readers other than those who have legal libraries at their command to trace the building up of the law on the basis of an Act passed more than half a century ago for the protection of the public and the guarding of the just rights of the medical profession.

The Medical Act, 1858, was once praised by an Irish Lord Chief Justice for the accuracy with which it was drafted, but nevertheless it has given rise in practice to a not inconsiderable number of appeals. The decisions of the courts have not always been satisfactory to medical men, or under their Act to dentists, and also have not always been easy to reconcile one with another. Mr. Harper tries to extract common principles underlying the judgments which have been given upon the frequently recurring question of the use of descriptions and titles implying qualification, as in the cases of Kelly, Andrews, Ferdinand, Bridgwater, and others. He is probably right, and unquestionably so when he suggests that a conviction now might be obtained more readily than 16 years ago in such a case as Bridgwater's, but the true explanation of inconsistencies which seem less unaccountable to lawyers than to laymen must surely be that magistrates before whom these cases are brought find the facts and convict or acquit. They are not always persons who logically follow principles, but if they have evidence before them sufficient to justify their findings of fact the judges of the High Court, who hear any appeal from their decision, can only review their decisions on the ground that they have been guided by mistaken views as to the law. They cannot disturb the "finding of fact." To separate fact from law is not always easy. Mr. Justice Henn Collins, afterwards Master of the Rolls, observed in Bridgwater's case, "On the cases as they now stand there is a complete fog. It is impossible to say whether this is a question of law or fact." Nevertheless, the court upheld the magistrate's decision discharging the defendant, although with some apparent reluctance, on the grounds that the facts as found left no alternative. We are inclined to think that a similar course would have been followed, involving in this instance the affirming of a conviction, if Ferdinand's case (referred to by Mr. Harper as in effect overruling the decision in Bridgwater's case) had had as its result an appeal to the High Court on a point of law. As it was it did not get further than the county of London sessions, where the appeal was upon both facts and law.

We congratulate Mr. Harper on a compilation which forms an apparently complete epitome of its subject in a convenient form.

Handbuch der Pathogenen Mikroörganismen. Herausgegeben von Dr. W. KOLLE und Dr. A. VON WASSERMANN. Zweite vermehrte Auflage. Fourteen Parts. Jena: Gustav Fischer. 1911 and 1912. Price 5 marks each part.

WE have here a number of instalments of the second edition of a monumental work. The subjects treated in these parts include the remainder of the general morphology and biology of microbes; the modes of infection; the biochemistry of the antigen, with special reference to the chemical basis of its specificity; natural and acquired immunity; antitoxic sera; methods of producing active immunity; the micrococci; the bacilli of plague, of gonorrhœa, and of tetanus; the pneumococcus; the hyphomycetes; the tubercle bacillus; and the bacteria of septicæmia. About half of the work has now been completed, and it will not be very long before the whole is issued. We do not think that the work could be surpassed at the present day in fulness and in the thoroughness with which the subjects have been treated. It will be for long the standard work of reference, for each article has been written by an authority, and the book may be received with confidence as representative of the present state of our knowledge.

A Dictionary of Applied Chemistry. By Sir EDWARD THORPE, C.B., LL.D., F.R.S., assisted by Eminent Contributors. Revised and enlarged edition, in five volumes. Vol. III. With illustrations. London: Longmans, Green, and Co. 1912. Pp. 789. Price 45*s.* net per vol.

Vol. III. of the revised and enlarged edition of "Thorpe's Dictionary" has not been long in succeeding Vol. II., and it shows the same careful appointment of contributors as before. The range of subject matter is from GR. to OILS, and two more volumes will complete the series. The volume contains some most interesting articles on modern technological developments, amongst which may be mentioned "The utilisation of atmospheric nitrogen," "Indigo, natural and artificial, and indigoid dyestuffs," "Nickel," and "Naphthalene," this last substance receiving lengthier treatment than any other substance included in this volume. Equal in importance are the admirable monographs on essential oils

and the fixed oils and fats. "Helium" is contributed by the editor, who has presented an interesting historical account of this element, together with a reference to its relationships with the radio-active elements. There are some admirable monographs dealing with much of the materia medica. Such are, for example, those on the gum resins, hemlock, liquorice, lobelia, laudanum, lecithin, nux vomica, jaborandi, and ipecacuanha. The recent pharmacological developments in regard to the value of emetine, the important active constituent of ipecacuanha, in the treatment of dysentery are not referred to, although in other instances—e.g., lecithin—a short account of its physiological action is given.

The article on "Matches" affords most interesting reading, not only in regard to the rapid evolution of these necessities, but also in regard to the particulars of their present manufacture, which has reached wide proportions in many countries. The fact is recorded that in Great Britain and elsewhere, where the use of ordinary phosphorus in this industry is forbidden, phosphorus necrosis may be regarded as a thing of the past; whereas in countries such as America, where there is not yet prohibition, the prevention of "phossy jaw" is still a matter of debate. Lastly may be mentioned an article on meat extracts, setting forth the history of the industry as well as the manufacture of meat extracts and the methods of analysis employed to gauge their value. We may note here a liberal drawing upon an article which appeared in THE LANCET of Oct. 24th, 1908, upon this subject, which should have, but has not, received acknowledgment. Statistics carefully compiled and calculations made by ourselves are faithfully reproduced without the slightest reference to their source. This naturally does not prevent us from saying that the writer has furnished a good up-to-date account of this industry and of the composition of the products as disclosed by modern applications of analysis.

Each succeeding volume preserves the reputation of its forerunners; the work of revision is being admirably and thoroughly done, and there is evidently imposed upon the contributors the condition that their writings shall be sustained by ample references to original and contemporary work.

Pathology and Treatment of Diseases of Women. Fourth edition, rewritten by Professor A. MARTIN and Professor Ph. JUNG. Authorised English translation written and edited by HENRY SCHMITZ, M.D. With 187 illustrations, 25 of which are in colours. London: Rebman, Limited. 1912. Pp. 475. Price 21*s.* net.

THIS well-known German text-book has reached its fourth edition and Dr. Schmitz has done well to undertake its translation. At the same time, it is a pity that he has not departed a little more from the original German construction and, without sacrificing any accuracy, as might easily have been done, written a little better English. In its present form the book is extremely irksome to read and contains many ungrammatical sentences, and this could readily have been avoided with a little more care. The matter contained in the book is excellent and is characterised by a sound judgment which render it of great value as a guide to the correct practice of gynæcology.

It is interesting to notice that the authors recommend the injection into the uterine cavity of various medicaments by means of Braun's syringe, a procedure which they have never seen attended by any harm. They do not think that in an ordinary case of atresia of the vagina with hæmatometra or hæmatosalpinx there is much danger of the rupture of the tube during the evacuation of the retained blood, at any rate this has not occurred in their experience. The section on atrophia uteri is interesting, but the recommendation to employ an intra-uterine stem pessary in such cases will hardly find favour among English readers. One of the characteristic features of the book is the stress laid by the authors upon the necessity for the treatment of the patient's general health in many affections of the pelvic organs, and more particularly in the functional disturbances. The various forms of displacement of the uterus are described very fully, and the direction of the treatment advised can be seen from the two statements that the use of pessaries in cases of descent of the uterus is to be avoided by all means, and that operative treatment for such conditions should be insisted upon if the general condition of the patient does not contra-indicate it. The plan of operation recommended must include the reposition and fixation of the uterus, the reinforcement of the pelvic connective tissue as a support for the bladder and rectum, the removal of the superfluous vaginal tissue, and the rebuilding of the perineum.

The authors utter a proper protest against the term "benign adenomata" for cases of simple hypertrophy of the endometrium, inasmuch as an adenoma is a new growth, and these conditions are nothing of the kind. In the operative treatment of myomata of the uterus a strong plea is made for conservative operations as far as possible, and the authors point out that the mutilation of a patient by removing the uterus should never be practised if it can possibly be avoided without an increase of the immediate danger of the operation. The arguments which are brought forward in support of this view are of great importance, and the large experience upon which it is founded entitles it to very careful consideration. The extended abdominal operation for carcinoma of the cervix uteri is described, and as recommended would be carried out on ordinary lines. In the treatment of pus-tubes by incision and drainage through the vagina the authors state that in their experience such a procedure often results in a complete cure. At any rate, the results obtained form a powerful argument against the tendency at the present time to remove not only the uterus, but also the tube on the other side, even in cases in which it is not certainly hopelessly diseased.

As we have already said, this book contains so excellent and well-balanced an account of the diseases of women that it is a pity that in its English dress it does not appear in a more acceptable guise.

The Immediate Care of the Injured. By ALBERT S. MORROW, A.B., M.D., Adjunct Professor of Surgery in the New York Polyclinic, &c. Second edition, thoroughly revised. London and Philadelphia: W. B. Saunders. 1912. Pp. 354. Price 12*s.* net.

THERE are many who have had no medical education and yet would like to be able to render first aid to the injured and to do what can be done until a medical man arrives, and Dr. Morrow's book is intended to afford that amount of information which a non-medical person may usefully acquire, so as to utilise those precious moments which so often must elapse in cases of accident before the arrival of a surgeon. This book is in no way intended to replace medical aid, and the author impresses on his readers that in all cases a surgeon should be summoned, though in the meantime what aid can be given by those present should be afforded.

The book devotes eight chapters to the structure of the human body, but the whole description is given so as to be understood without difficulty by ordinary members of the community. The second part deals with bandages and dressings, the administration of remedies, and the use of antiseptics. The third part contains the first-aid treatment of accidents, with the usual chapters on hæmorrhage, burns, fractures, and so on. The only point which we feel called on to criticise is concerned with some directions given as to the application of pressure for the arrest of hæmorrhage.

We are told, "It should be remembered that if the hæmorrhage is from an artery, the pressure must be applied at some point between the wound and the heart; if the bleeding is from a vein, the pressure must be applied on the side of the wound farthest from the heart." This teaching has its value, but it is absolutely useless in practice for those attempting to render first aid. We can imagine the earnest student anxiously endeavouring to discover whether the bleeding is arterial or venous, he gazes at the wound and asks himself whether the blood is red and escaping in spurts or whether it is dark red or blue in colour and flows in a continuous stream; for these are the descriptions of arterial and venous bleeding given by this work. Moreover, the form of venous hæmorrhage which a student of first aid would be most likely to have to treat temporarily would be the bleeding from a varicose vein, and in that condition more blood comes from the proximal portion of the vein than from the distal, and therefore pressure on the distal side would do but little good. The safest directions for the arrest of hæmorrhage for the student of first-aid are these: if he endeavours to stay the bleeding by digital pressure the safest place to apply the pressure is on the bleeding spot; while if a tourniquet is used it should be applied between the wound and the heart.

Surgical Operations: A Handbook for Students and Practitioners. By Professor FRIEDRICH PELS-LEUSDEN, Chief Surgeon to the University Surgical Clinic, Berlin. English Translation by FAXTON E. GARDNER, M.D., of New York. With 668 Illustrations. London: Rebman, Limited. Pp. 726. Price 30*s.* net.

Professor Pels-Leusden's work is well known in the original, and we are pleased to see it in an English dress. As the author acknowledges in the preface, it cannot be described exactly as a treatise on operative surgery, nor is it simply a manual of surgical technique; the name which he has given it, "Surgical Operations," gives the best idea as to the nature of its contents. It contains all the usual methods of operating, but everywhere it bears the impress of an individual mind, and in that consists its great value. The illustrations are adequate, most of them have been drawn by Dr. Reinhold Müller, and they show clearly the essential points, omitting unnecessary details. We would, however, suggest that in a second edition each figure should have its description beneath it, for at present the reader has to search in the text for the explanation of the illustrations. The translation is readable, but at times the translator has followed the original too closely, so that the result is not exactly English. Such a sentence as "the flaps are avived along the edges of the cleft" shows what we mean. Such English, being comprehensible, may not lessen the value of the book, but we would suggest that the translator should correct it in a future issue.

Transactions of the Second Biennial Congress of the Far Eastern Association of Tropical Medicine. Edited by FRANCIS W. CLARK, M.D. Durh., M.R.C.P. Lond., D.P.H., Medical Officer of Health of Hong-Kong and General Secretary of the Association. With numerous illustrations. Hong-Kong: Noronha and Co. 1912. Pp. 399. Price 10*s.* 6*d.*

THIS volume gives a full account of the proceedings of the Second Biennial Congress of the Far Eastern Association of Tropical Medicine, held at Hong-Kong in January last year, as to which we gave some particulars in THE LANCET of March 9th, 1912. In addition to printing the complete text of the scientific and practical papers, some 46 in number, read before the members, along with the resulting discussions thereon, it gives the address of welcome which the Governor of Hong-Kong, Sir Frederick Lugard, G.C.M.G., gave to the association, as well as the residential address delivered at the opening meeting by Dr. J. Mitford Atkinson, principal civil medical officer of the colony, on "The Progress of Tropical Medicine during the Past Twenty-five Years."

The papers afford evidence of the continued interest taken by medical practitioners in the Far East in the subject of beri-beri, for eight contributions on the subject were presented, most of them being by well-recognised authorities upon the disease, including, among others, Fraser and Stanton, of the Federated Malay States Medical Research Institute, and Chamberlain, Vedder, and Heisser of Manila. Next in importance, judging by the number of papers, comes malaria in its various aspects, as to which there were seven contributions; four others related to plague, three to dysentery, and two dealt with the influence of tropical sunlight upon the white man. As showing the wide scope of the other papers discussed at the Congress we may mention that they included the following subjects—tuberculosis, the prophylaxis of syphilis, intestinal and other parasites, cholera, spotted typhus, relapsing and miliary fevers, the prevention of infantile tetanus, the care of children in the tropics, infectious diseases in semi-civilised countries, quarantine regulations in the Far East, Indian native immigration, and the care of the eyesight in tropical lands. The editor has appended to the Transactions samples of public health literature prepared by himself in pamphlet form, and printed for distribution in English and Chinese, on vaccination, mosquitoes and malaria, beri-beri, and on the prevention of plague. The papers and discussions were quite of an international character, since in addition to Great Britain and its colonies and dependencies, France, Germany, Holland, Portugal, the United States, China, and Japan were all represented.

From this brief outline of the contents of the volume it will be seen that the Transactions contain a large amount of valuable and interesting matter, of a scientific as well as of a practical kind, which will well repay perusal by those medical men whose work lies in the tropics, or who are concerned in the treatment and prevention of tropical diseases.

Manuel des Maladies de la Nutrition. By L. BABONNEIX, J. CASTAIGNE, A. GY, and F. RATHERY. Paris: Masson et Cie. 1912. Pp. 1082. Price 20 francs.

THIS volume has been published "under the direction of" Dr. G. M. Debove, Dr. C. Achard, and Dr. J. Castaigne. Those named, joined with the authors of the various sections into which the book is divided, sufficiently guarantee the efforts which have been made to make the work trustworthy and up to date. The numerous books which have been published on the disorders of nutrition in the course of the last few years have considerably modified the descriptions which had been previously given of these maladies. A recapitulation of the views at present held was therefore desirable, and in the volume now under consideration these views are presented by authors who have made a special study of this branch of pathology.

The first section is devoted to the subject of the various forms of rheumatism. It is written by Dr. Rathery, who deals with the matter in the widest possible sense, for under this heading are included acute articular rheumatism, "secondary rheumatism," such as gonorrhœal rheumatism and rheumatism connected with tuberculosis, nervous arthropathies, and "chronic rheumatism," under which are described the fibrous, muscular, and osteo-articular types. The second part is also written by Dr. Rathery, and is concerned with disorders of nutrition, such as obesity, emaciation, gout, and diabetes. All these subjects are exhaustively described, special stress being laid on diagnosis and treatment. The author's remarks are essentially practical, and are evidently the result of considerable

thought and experience. Dr. Babonneix contributes some important chapters on rickets and osteomalacia. The third part deals with various intoxications, which are described by Dr. Castaigne and Dr. Gy. Numerous conditions are included under this heading, such as alcoholism, lead, mercurial, arsenic, and phosphorus poisoning, and the effects of tobacco and opium.

The whole volume is well written and edited, an enormous mass of information has been put together, the theoretical considerations are satisfactorily set forth, whilst the practical directions are ably and plainly given.

Sewage Disposal. By GEORGE W. FULLER, Member of the American Society of Civil Engineers, &c. London: McGraw-Hill Publishing Co. 1912. Pp. 767. Price 25*s.* net.

THE first half of this volume is devoted to a consideration of the problems which have to be considered in connexion with the treatment of sewage, its composition, aerobic and non-aerobic decomposition, the relation of sewage bacteria to offensive odours, the effect of sewage pollution on water used for drinking purposes or from which shell-fish are obtained for human consumption, and the different aspects which these questions assume according to local conditions. All these subjects are fully discussed from the viewpoint of the available American data, and the requirements which are generally held to be necessary in the United States.

While the author has in places drawn upon European experience, which he states in his preface to be richer and broader in many ways than the American, he does not attempt to write of European practice, considering that this ground has been sufficiently covered by recent publications. On the whole, we think this limitation adds to the value of the work, as it enables the reader to realise that in many respects American problems of sewage treatment are very different from those which have to be met in the United Kingdom or on the Continent. The chief point of difference, naturally, is the enormous dilution to which sewage can be subjected when it is discharged into the great rivers, lakes, and estuaries. Questions of drinking-water apart, there is no doubt that many of the great inland cities in America can discharge their sewage without serious consequences after treatment which need be considerably less thorough than is required from English towns of similar size. On the other hand, there must be many places in America where the available diluting volume is strictly comparable to our own conditions, and the instances cited in which demand has arisen in the United States for efficient and thorough sewage purification show that this has been brought about for reasons with which we are quite familiar in this country, such as water epidemics, shell-fish contamination, offensive accumulations and nuisance, development of algal growths, and detriment to fish life.

Mr. Fuller lays stress on the self-purification of rivers and streams, and is evidently sceptical of the necessity of carrying out some of the proposals for purification which are advocated by American sanitarians. In many places he pleads for a proper sense of proportion, without, we fear, bringing his reader much nearer to the principles on which the conflicting claims are to be balanced. If the book had been written after the issue of the eighth report of the British Royal Commission on Sewage Disposal, Mr. Fuller would have found, we think, an admirable exposition of the basis on which the whole problem may be judged, and we should be glad to see in later editions the findings of this report considered as a basis of American practice.

The latter part of the volume describes sewage treatment works, screening, sedimentation, intermittent sand filtration, contact beds, sprinklers, and treatment by aeration, hypochlorite, and ozone. The descriptions are clear, and contain many observations of much practical value. As in this country, the sprinkler type of filter has come to be recognised as usually the cheapest available method for reducing the organic content of sewage to the point of stability and non-putrescibility. The author considers that sprinkling filters will continuously purify about 2,000,000 gallons per acre daily without requiring to be cleaned or remade, provided solid particles more than an inch in average diameter are excluded, and he finds fixed sprinkler nozzles more satisfactory than rotating arms. He considers that a distance of one-eighth of a mile from "made-up" streets in the case of smaller filter plants and of a quarter of a mile in the case of larger plants may reasonably be required for the prevention of offensive smell. The moth flies (Psychoda alternata), which are so numerous on filters of this type, are said to be seldom found more than 100 yards away. Professor Phelps's observations on the sterilising effect of hypochlorites when applied to settled sewage are referred to. The present use of hypochlorite appears to be limited to a few places in which, on account of shell-fish pollution, sterilisation of the effluent is attempted, and others in which hypochlorite is added when sewage is discharged into large volumes of water after mere screening or settling in order to prevent local nuisances arising. The author lays stress on the advantages of septic tanks constructed in two storeys, in consequence both of the less offensive effluent produced and of the greater ease with which sludge is removed.

It should be added that Mr. Fuller's style is clear and readable and that his illustrations have been judiciously chosen.

LIBRARY TABLE.

Medical and Surgical Science: its Conception and Progress. By S. HILLIER, M.D. Edin. Halifax: Milner and Co. Pp. 127. Price 1*s.* net.—This book is a volume of the series entitled "The Twentieth Century Science Series," other volumes of which deal with such subjects as botany, prehistoric man, geology, and evolution. Dr. Hillier's contribution is a necessarily short *précis* of the history of medicine and surgery, and as such certainly deserves a place in a scientific series. But as it stands the book sorely needs revision. Not only are there many misprints—e.g., Contineus for Continens (p. 28) and Duputren for Dupuytren (p. 82)—but there are positively inaccurate statements, such as that dissection of the human body was prohibited by a Papal interdiction in 1300 (p. 36), evidently a restatement of the old fable about the Bull of Boniface VIII. (1294–1303), which really only prohibited the custom of cutting up and boiling the bodies of those who perished in war in order to bring their bones home. The Bull is dated from the Lateran in the sixth year of Boniface's pontificate. Another remark of Dr. Hillier to which we must demur is that on p. 83, where, in talking about anæsthetics, he says: "Socrates drank hemlock during the last hour of his life, so as to soothe his passage to the grave." Dr. Hillier is quite correct in saying that drugs with an anæsthetic power were known to and used by the ancients, but his statement as to why Socrates took hemlock is a perversion of the facts, as he will see if he refer to the Phaedo of Plato. Carefully revised, Dr. Hillier's book will have its use for such readers as cannot refer to the admirable article on the History of Medicine in the current edition of the Encyclopædia Britannica.

Handbook for Midwives and Maternity Nurses. By COMYNS BERKELEY, M.A., M.D., B.C. Cantab. With frontispiece and 58 illustrations in the text. Enlarged edition, with Appendices on Cancer of the Uterus, the Rules of the Central Midwives Board, Venereal Disease, Cæsarean Section, &c. London: Cassell and Co. 1912. Pp. 324. Price 5*s.*—In the third edition of this manual Dr. Comyns Berkeley has

added two further appendices, one on venereal disease and the second on Cæsarean section from the point of view of the duties of the nurse. They will add to the value of the book, which is evidently appreciated, as it has gone through three editions in six years, in spite of many competitors. It contains in a clear and concise manner all that is required of nurses and midwives presenting themselves for the examination of the Central Midwives Board. We are still of opinion that the author would be well advised to leave out or to shorten the section dealing with home percentage feeding, for, as we pointed out in a previous review of this book, the percentages aimed at are seldom attained with accuracy, even when the milk is compounded in a laboratory, and the method is hardly one suitable for either midwives or maternity nurses. We notice that the error in the dilution of condensed milk has not been rectified, and if the author leaves this direction in future editions he should state what brand of condensed milk he refers to, since these substances differ in composition very considerably.

Die Roentgen-Literatur. Teil II. Sach-Register. By Professor HERMANN GOCHT, of Halle. Stuttgart: F. Enke. 1912. Pp. 508. Price 15 marks.—This is a very complete catalogue of X ray literature up to the time of publication, and has been brought out under the auspices of the German Roentgen Society. In the preparation of this work the services of a committee, composed of Dr. Albers-Schonberg, Dr. Bourwieg, Dr. Eberlein, Dr. Grassner, Dr. Grashey, Dr. Holtznecht, Dr. Immelmann, Dr. Koler, Dr. Krause, Dr. Levy-Dorn, Dr. Rieder, and Dr. Walter, names which are a full guarantee of the thoroughness of the work, have been utilised. The catalogue extends to over 500 pages, and has been divided into five main divisions—viz., Books and Reports, Physics and Technique, Diagnosis, Therapeutics, and Forensic. When we come to look over this portentious list it comes as a surprise to find how extensively the literature of these subjects has grown. No less than 20 pages are devoted to articles on foreign bodies alone, and five to urinary calculus. There are over 30 text-books and 50 atlases. No branch of the subject has been omitted, and he who wishes to get at all the available literature on any branch will find it all here and arranged in a most convenient manner. In view of the importance of such a catalogue we trust it will be kept up to date and editions issued as the conditions permit.

Report of the Proceedings of the Congress of Universities of the Empire. Edited by ALEX HILL, M.A., M.D., F.R.C.S., Secretary to the Congress. London: Hodder and Stoughton. 1912. Pp. 464. Price 10*s.* net.—The Congress of Universities of the Empire was held in London under the chairmanship of the Earl of Rosebery, Chancellor of the Universities of London and Glasgow, and Lord Rector of the University of St. Andrews, from July 2nd to July 5th, 1912, and was attended by official delegates from every university, 53 in number, embraced within the jurisdiction of the Imperial flag. We discussed the scope of the Congress in a leading article in THE LANCET of May 18th, 1912. The Report of its Proceedings, now lies before us, and Dr. Hill is to be congratulated on the promptitude with which he has done his work. While the problems of education discussed are necessarily general, this volume should appeal to all who are especially connected with the particular subject of training for the medical profession where adequate general culture is now recognised as a necessity.

Income Tax: a Concise Exposition of the Law and Practice Thereof, with Instructions as to Filling Up and Returning the Necessary Forms, to which is Prefixed a Short Thesis on Direct and Indirect Taxation, with Forms. By THOMAS C. JARVIS, B.A., LL.B., sometime Inns of Court Exhibitioner in Jurisprudence and Civil Law, of the Middle Temple, Barrister-at-Law. London: Effingham Wilson and Stevens and Sons, Limited. 1912. Pp. 225. Price 6*s.*—The lengthy title of this work sufficiently explains its scope, and the examples of the several official forms duly filled in will afford useful guidance in this direction. To the majority income tax returns bristle with difficulties, and anything which helps to make them comprehensible is heartily welcome.

MISCELLANEOUS VOLUMES.

THERE are innumerable "methods" and books for learning French. Of course, no one can learn to speak French intelligibly from any book; still, a fair knowledge of the language may be picked up for reading purposes from books, and to this end the *French Grammar Self-Taught*, by J. LAFITTE, B.-ès-L., principal French master, City of London School (London: E. Marlborough and Co. 1912. Pp. 136. Wrapper 1*s.*, red cloth 1*s.* 6*d.*, key 6*d.*) may be useful. A companion book, *French Self-Taught by the Natural Method with Phonetic Pronunciation*, by the same author (same publisher and price), aims to teach French conversation, a less practical object. After carefully reading the instructions on pronunciation, for example, we should certainly not consider that the French *eur* can be even approximately apprehended from ĕr, even though we are told the italic *r* is silent—e.g., it would require a good stretch of imagination to find *le voleur* in ler volĕr.—When reviewing the first edition of *Marlborough's Travellers' Practical Manual of Conversation in Four Languages: English, French, German, and Italian* (Third edition. Revised. London: E. Marlborough and Co. 1912. Pp. 144. Price, cloth, 1*s.* 6*d.*), we said that it was a useful book for travellers on the continent to possess. It will easily fit into the ordinary pocket, and is not too broad for the waistcoat pocket. It consists of travel notes, tables of money, weights and measures, pronunciation, conversations on three dozen subjects, a washing list, and a dictionary of 36 pages of useful words. The only errors we observe are on page 79, the misprint of "s" for "?" in "Wie lange werden wir auf der See sein?" and on page 144 "to wrap," which is given as "entwickeln" instead of "einwickeln."—We have examined with a curious interest the *Esperanto-English Dictionary* (London: Stead's Publishing House and British Esperanto Association. 1912. Pp. 480. Price 5*s.*), compiled by EDWARD A. MILLIDGE, and are struck with two features: first, the power of development inherent in the language by its flexible system of derivatives, each indicating one relation or modification, and one only, of the root word, so that ambiguity appears impossible; and, second, by the apparent ease with which it can be adapted to all kinds of technical phraseology, including that of medical science, by the "Esperantising," if we may use the word, of those technical terms which, being of Greek or Latin derivation, are already practically international save for slight variations of form. Terms used in medicine and the allied sciences are quite abundant, and in most instances their significance would be at once recognisable by medical men of any country. We have no doubt that the book will be welcomed by medical men who are interested in Esperanto.

The applications of electricity are now universal. In his *Electricity made Plain* (Manchester: John Heywood, Limited. 1912. Pp. 133. Price 1*s.* net), Mr. GEORGE R. PEERS has endeavoured to furnish the average reader without scientific knowledge with a sufficiently intelligible explanation of these various uses of electricity. After a brief popular account of the elements of electrical science follows an explanation of electrical accumulation and installation, of its application to domestic purposes of

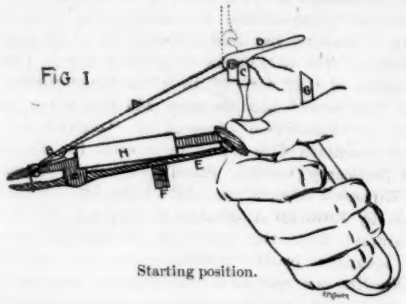
various kinds, the telegraph in all its branches, including wireless telegraphy, lifts, industrial uses, transportation, including motor cars and aeroplanes. Chapters XVI. to XIX. inclusive are devoted to the applications of electricity in medicine and surgery, while Chapter XX. deals with electro-metallurgy. There is a glossary of technical terms. While this latter part may serve to arouse the interest of such medical men as have not yet paid any attention to medical electricity, by coupling it up, so to speak, with their use of electricity for other purposes, and while it is not so written as to afford any aid for the actual application of electricity in disease by the layman, it is nevertheless open to the objection that it may suggest to the mind of the general electrician to attempt to include such use of electricity in his area of operations. This cannot be too strongly condemned, because the application of electricity in disease cannot be safely or wisely attempted by one not thoroughly conversant with human physiology and anatomy. The resultant of the application of electricity in the mechanical affairs of life is itself mechanical; its effects upon the living organism are biological, and subject, therefore, to an infinitely greater number and variety of disturbing influences.

New Inventions.

LIGATURING FORCEPS.

I HAVE designed this instrument for the saving of time in any operation involving hæmostasis, and more particularly for the easy and quick application of ligatures in inaccessible situations, as in pelvic work. As will be seen from the accompanying sketches, the instrument is a combination of

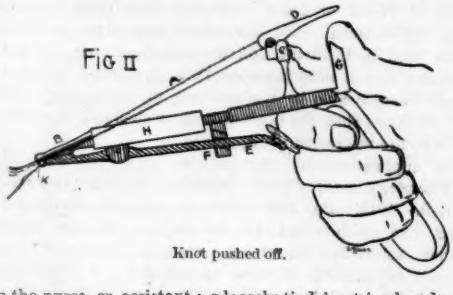
FIG I



Starting position.

a hæmostatic forceps, designed to carry a ligature loosely knotted, with a sliding arrangement for pushing off and tightening the knot. In the first place, whilst standing in a support on the instrument table, it is armed with a ligature

FIG II



Knot pushed off.

by the nurse or assistant; a loosely tied knot is placed over the jaws of the forceps, and the ends of the ligature, A, are passed round the grooved ends of the short levers, B, and clamped at C by depressing the trigger, D. A single knot with a double twist will suffice for small vessels, but if desired a second knot may also be loosely tied and placed on the instrument. The surgeon then takes the instrument, holding the handle with his palm and fingers, leaving the thumb free to operate the lever, E, with a button-like end, which controls the jaws of the forceps (as in ordinary Spencer-Wells forceps), and which is locked by the rack, F. As soon as the bleeding vessel, or tissue containing it, K, has been seized, the thumb is transferred to G, and by firm pressure there (as in using an ordinary tonsillotome) the slide, H, and short levers, B, are advanced, the knot is slipped over the nose of the forceps, and by further pressure tightened. This is brought about by the grooved ends of the levers, B, being forced apart by the wedge, J. (Fig. 3.) An arrangement is present so that the jaws of the forceps are automatically unlocked as the knot is being finally tightened. The trigger D is then raised by the tip of the thumb, and this unclamps the ends of the ligature at C. These are then seized with the thumb and forefinger of the other (left) hand, and the instrument is laid down. The ends are then cut short in the usual way. If a second knot has been put on the ligature (as in the case of a larger vessel) it would be situated somewhere near A in Figs. 1 and 2, and would have to be tightened by hand after the instrument has been removed. In the ordinary way it takes at least 15 seconds for the surgeon with the help of an assistant to catch an obvious vessel, tie it off with two knots, and cut the ligature. With this instrument the surgeon alone can do all this in 7 seconds, or less if only one or in 5 seconds twice be used. knot twisted Consequently, if the surgeon and his assistant are each provided with an instrument, a saving of about 75 per cent. of the time of hæmostasis is effected. The instrument is of quite recent manufacture, and therefore has not yet been tested fully. It is certain, however, that it will slip off and tighten the ligature efficiently. It needs an hour or two's practice on the part of the surgeon to use it quickly. It is necessarily rather complicated, but not more so than many instruments in constant use, such as tonsil guillotines, &c., and it takes to pieces easily for cleaning. It has been demonstrated by me before well-known London and provincial surgeons, and it is now undergoing further trial at Guy's Hospital. It has not yet been manufactured in quantity, but inquiries should be addressed to Messrs. Weiss and Son, Oxford-street, London, W.

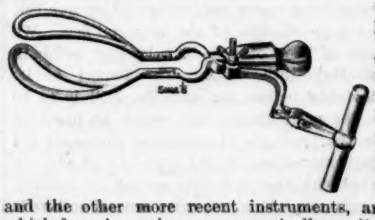
FIG III

Nose of forceps from above. Knot tightened.

Leicester. N. I. SPRIGGS, M.D. Lond., F.R.C.S. Eng.

A NEW AXIS TRACTION FORCEPS.

THE advantages which I claim for my new design of tractor are that the forceps have the very simple attachment of the original "Neville's," enabling them to be used equally well with or without the tractor. Also that the tractor can be put on or taken off at any stage of the delivery. The forceps differ from and are superior to the original "Neville's" in that the "Neville's" were admittedly not in the real pelvic axis, while my tractor, 1¼ inches longer in the longitudinal limb, gives practically the same axis of traction as Milne Murray's and the other more recent instruments, an axis through which force is much more economically applied and delivery more easily effected than in the original "Neville's." With forceps of this design the general practitioner has a reliable instrument for all those easier cases where instrumental delivery may be desirable, and at the same time a powerful help in really difficult midwifery. The blades can be made to suit the wishes of each user. Messrs. Allen and Hanburys, Limited, Lombard-street, E.C., are the makers.



Burton-on-Trent. E. C. STACE, F.R.C.S. Irel.

THE LANCET.

LONDON: SATURDAY, JANUARY 18, 1913.

The National Insurance Act.

MEDICAL benefit under the National Insurance Act has now become due to all insured persons, and throughout the greater part of the country some means of providing this benefit has been found by the various Local Insurance Committees responsible for its administration. It is early yet to say how complete these arrangements are in any area, and it is, of course, impossible to say how far they are satisfactory; but it seems clear that in the great majority of districts, and as the result of strong efforts, the machinery for supplying medical benefit has been set up by the appointed date and is now at work. Some sort of medical service under the Act has thus been secured in most places at the outset, and it remains to be seen how it shapes during the three months for which the provisional agreements have been signed by the medical men on the panels. For the moment it would appear that the Government has made good its promises, and that medical objections to the final terms and conditions of service have been successfully over-ridden.

It is perfectly obvious that in many places a very grudging consent has been given by medical men to the official scheme, while in others where a medical service is forthcoming the practitioners have not exactly gone upon the panels in accordance with the Regulations, but have contrived a *modus vivendi* with the Insurance Committee which has not been repudiated by the Commissioners. No doubt the position of those medical men who have, as it were, contracted irregular unions with a Local Committee will be made more plain at the meeting of the Representative Body of the British Medical Association which takes place at the Connaught Rooms to-day, since many of them seem to have been among the foremost advocates of the policy of refusing service under the Act. This meeting may have a most important outcome. The Representative Body within a month of its last special meeting has been called together on the demand of seven Divisions to reconsider the policy of the Association towards the National Insurance Act. It has to consider firstly the desirability of formally releasing members of the medical profession from their undertakings and pledges, and secondly, the situation created by the attitude of the Government towards the declared policy of the Association. The urgent necessity for a decision upon the first matter, and for a statesmanlike attitude towards the second, must be apparent to everyone. Great changes have taken place since the meeting of the Representative Body on Dec. 22nd last, and although we have no knowledge of how far, if at all, the representatives have received clear instructions from their Divisions in the light of altered circumstances, it must be supposed that some modification at least will be made in the policy of total refusal of service. A mortifying position has to be faced, and this can only be done with success if bravery is shown. It may require as much courage to change an adopted view as to maintain it, a consideration which has very generally escaped attention; while the Representative Body has now to face actual occurrences and not merely apprehensions. To a great extent the position is clear, and to many practitioners it is a very unpalatable one; but action and not recrimination will be expected.

By various means panels of some sort or another have been formed up and down the country. But in London, where organised opposition has had special advantages, only some 800 practitioners, or less, are available for the panels. Nevertheless, insured persons have been officially informed that they will not be allowed to contract out of the Act wholesale. The public support upon which the policy of contracting out depends can hardly be obtained in any articulate form. It has been rightly urged that the last word is with the insured, and their representative societies, whatever the individual feeling may be, have declared against the views of the London Medical Committee. Later in the day the insured may have an opportunity of showing a different disposition, but the Representative Body must not mistake any modified sympathy with the medical profession for a general sentiment on the part of the insured to prefer the alternative scheme of the British Medical Association to the panel system. Many of the insured undoubtedly have that sentiment, but they cannot voice it in any practical manner. These are facts which cannot be ignored, and they must be reckoned with by the Representative Body when the general lines of future action are laid down.

Declarations for Passports and the Medical Profession.

AT the Central Criminal Court Mr. ALFRED BENSON, a medical practitioner, pleaded guilty to the charge of knowingly and falsely signing declarations which enabled two men, giving the names of LOUIS KISENEYDER and LUCAS KUSCHNEYDER, to obtain passports before proceeding to Rotterdam. Mr. BENSON was sentenced by Mr. Justice DARLING to pay a fine of £25 in each case. At the same sessions of the Central Criminal Court another gentleman, Mr. H. C. DE PINNA, was found guilty of a similar offence, and having been recommended to mercy by the jury was bound over to come up for judgment if called upon. In his case the passport was made out upon the declaration of the defendant to JOSEPH YEOWELL, but was, in fact, applied for and used by a Russian subject named JOSEPH PETRIESKOVSKI for the purpose of travelling in Russia. A man named YEOWELL had before received passports which PETRIESKOVSKI had made use of, these being obtained through the declaration of another medical practitioner who knew YEOWELL and believed that they were for his use. In yet a third case another notary has been brought before the magistrate at Bow-street

police-court, and has been committed for trial. In this case also the man PETRIESKOVSKI figures, and passports are alleged to have been obtained bearing names which should have suggested foreigners rather than subjects of King GEORGE V.

Medical practitioners have a wider acquaintance than most of those who are authorised to sign declarations enabling other persons to obtain passports for travel in foreign countries, therefore it is to be hoped that members of the medical profession will note carefully the case of Mr. BENSON. He is not the first medical man to suffer in connexion with the making of a declaration without full knowledge of the person on whose behalf he made it, and no doubt he acted as he did under the impression that he was complying with an unimportant formality. Mr. Justice DARLING called attention to the fact that he received a fee of 5*s*. This would obviously not be a sum which would tempt any man in the position of a medical practitioner to commit an act which he had reason to believe was an infringement of the law, and no doubt Mr. BENSON accepted it as a nominal sum in respect of a service which, as is suggested above, he regarded as a matter of form only. Nevertheless, the acceptance of any fee on such an occasion, where no fee is prescribed by any regulation, is to be regarded as objectionable. Solicitors and notaries may be in a different position, but the great majority of those who may sign passport declarations, banking firms, mayors, magistrates, justices of the peace, ministers of religion, barristers-at-law, physicians and surgeons, must be regarded as persons who on account of their positions are regarded as fit to guarantee the respectability of applicants and who are expected to act out of friendship in order to be of service to individuals with whom they are acquainted. Mr. Justice DARLING suggested that the list given above should be curtailed, and no doubt the imposition of more stringent conditions in connexion with passports would be easy, though it might prove inconvenient to many. Until any alteration is made, however, we would recommend those asked to sign declarations to read carefully the form to which they append their names and to consider the purposes for which passports are issued and those for which they may be used. If they desire to go further into the matter they will find full authentic information in the "Foreign Office List," an annual publication, and they will see there how seriously many of our neighbours treat the question of passports. In the case of some countries the passport has to be *visé* before the traveller leaves England in all cases; in some they are absolutely necessary for foreigners, or at all events in certain circumstances; in others, as in the United States, there are no passport regulations to be complied with. It will be particularly noted also that the regulations for issuing passports to British born subjects are not the same as those affecting naturalised foreigners, which will explain the particular reference made above to the names of the persons using and applying for the passports in question.

It will further be well to remember that the signer of the declaration avers that to the best of his knowledge and belief the applicant is a fit and proper person to receive a passport. Nothing is said authorising the signing of the declaration upon "information" as to the applicants being a fit and proper person. We lay stress upon this fact because medical men are so peculiarly open by the circumstances of their profession to being approached by persons who from most worldly points of view are absolute strangers to them, but who, from the fact of having sought and obtained medical advice, may establish a real intimacy. To assist a man of whom little is known to obtain a passport is a grave international misdeed, though it be done in innocent kindness.

National Insurance as it Affects the Voluntary Hospitals.

ONE way and another, as students, resident medical officers, and consultants, all practitioners of medicine are or have been in intimate connexion with the voluntary hospital system. Nothing which vitally concerns the working and stability of that system can be a matter of indifference to the medical profession, and nothing which changes the established order of medical practice can fail to react upon the hospitals. Absorbed in the difficulties of its own relations to the medical benefit problems of the Insurance Act, the profession generally has scarcely as yet had time to consider the bearings of that measure upon the hospitals. But it is already evident that this indirect effect of the Act upon medical practice must soon make itself felt, and that the results may prove as far-reaching as the more direct consequences already promise to be. Amongst the boards of management of the voluntary hospitals it is clearly apprehended that the times are critical, and that the Act is likely to set in motion forces which may seriously modify the voluntary system or even threaten its very existence. We therefore need no excuse for going again over ground recently traversed, so that at any rate altered conditions may not find our readers unprepared.

Some of the bearings of National Insurance upon the hospitals can be predicted with a fair prospect of accuracy; others are so largely matters of conjecture that they cannot as yet afford any sure basis for guidance. Those which are engaging the anxious attention of hospital managers concern chiefly finance in its double aspect of income and outgoings. The Act has already had distinct effect in diminishing the income from annual subscriptions. Some of the charitable people who support hospitals have withdrawn or diminished their subscriptions because, as employers, they are now taxed for the medical (and other) benefit of employees. It is probable that the extent of the loss from this source has been over-estimated by some hospital treasurers, but it is also certain that there is such a loss to be faced. Since this class of subscriber is also the chief provider of testamentary bequests, it is possible that these, too, may be affected to some degree. The insured, in their turn, may also contribute less liberally than heretofore to hospitals. In many parts of England, more particularly in the north, large voluntary hospitals find their chief source of income in the contributions of industrial workers collected through their own organisations. It is all very well to point out to such men and women that the Insurance Act does not relieve the hospitals of a penny of

expense, nor themselves of dependence upon the hospitals for in-patient treatment. Shrewd as the majority of them are, they are yet sufficiently hit in pocket by the Act to make it doubtful whether this argument will prevail and whether the hospitals will be as staunchly supported by them as in the past. If the exact effect of the Act upon the income of the hospitals is difficult to forecast with certainty the output presents questions more vexed and intricate still. In 1911 Mr. LLOYD GEORGE seemed to contemplate relieving the hospitals of all responsibility for the treatment of the insured. Now he realises the magnitude of such a task, and relies on the hospitals to make the Act workable. Out-patients will be fewer than hitherto if the panels can be made even moderately efficient. Mr. SYDNEY HOLLAND estimates this decrease in the case of the London Hospital at about 25 per cent. in number. The diminution in cost will not be so great; and even if it were, it is not the out-patient departments that run away with money. In-patients will as certainly tend to increase in number. Almost every regulation of the panel service will accelerate that tendency. Hitherto it has been to the interest of the practitioners in working-class districts to keep their patients (other than contract patients) under treatment at home, and to practise operative surgery for such fees as they could get. Now it is to their interest to put the insured straight away into hospital, and to assume a diffidence about operative work which they have previously concealed or never felt, a change in the conditions of practice which will not make for clinical progress. Perhaps some patients who formerly would have had better chances of recovery in hospital, but were kept at home, will in future seek admission to the wards; but so certainly will many who could still quite well be looked after in their homes. The latter it will be for hospital officers to reject, and the task may be one of considerable delicacy; the former have a valid claim to in-patient treatment.

It is not surprising, therefore, that the Council of the British Hospitals Association has had to take note of the cross-currents which the Act has set in movement, and that its recommendations are being adopted by hospitals, great and small, in all directions. The gist of their advice is that insured persons should be refused treatment if this can be provided by the Insurance Committees, but not if their needs can only be satisfied through the assistance of the charity. No exception can be taken to this attitude. But a further point arises and must be faced: it is whether the resources of the hospitals will be equal to the discharge of their enlarged functions. Straitened in means as most of these charities habitually are, it is conceivable that the Act will reduce some of them to bankruptcy, a contingency which may not be so remote as it would be catastrophic. To ignore this possibility is foolish, and the medical profession owes thanks to the editor of the *Hospital*, who has not ceased to utter notes of warning. The plan which has been persistently advocated in our contemporary for some months is a modification of the German system. It is based upon *pro rata* payments from public (insurance) funds to the hospitals, determined by the actual cost of treating the insured, with an added 10 per cent. for the remuneration of the medical staff. An arrangement upon lines such as these, it is contended, would preserve all that is best in the voluntary system, and at the same time prove the best bargain the State could make on behalf of the wage-earners. Whether this scheme or some similar compromise could be made satisfactory to all parties experience alone can decide; but those responsible for hospital management must look for changes in hospital finance and administration almost as revolutionary in their effects as the changes in medical practice which are occurring under our eyes to-day, and there will have to be some readiness to try expedients in the face of difficulties. Great modifications in the voluntary system, as we know it at present, could not fail to interact upon medical education and medical practice, both special and general; and they deserve, almost as much as the panel system itself, the earnest thought of every one of us.

Annotations.

"Ne quid nimis."

NEW LIGHT ON LEAD POISONING.

WITH the tremendous expansion of industrialism which took place during the nineteenth century in England there arose also serious problems of national health created by industrial diseases. It will be, and already is, the honourable privilege of the twentieth century to minimise and ultimately to prevent the ravages of these hindrances to civilisation. The prevention of miner's nystagmus and of lead poisoning is quite as important for us as the abolition of yellow fever or the cure of yaws. Now prevention, whether at home or in the tropics, is only feasible when the factors which conduce to a given disease are fully understood and taken into account. One of the aims of the hygienist against malaria is the destruction of mosquitoes, and that involves a knowledge of their breeding habits and the draining of all stagnant waters. In the same way measures aimed against lead poisoning can succeed only if the sources and routes of lead absorption are fully comprehended. Lead is a necessity in many trades and in many manufacturing processes, and although chronic lead poisoning is less frequent and less fatal than it used to be, it is still a serious menace to large numbers of industrial workers. Impressed by this fact, two workers, Dr. T. M. Legge and Mr. K. W. Goadby,[1] have joined forces in order to reconnoitre the enemy's position very thoroughly and to get such information as may lead to a more successful attack. Their collaboration has produced results which must alter many of the accepted ideas concerning the mechanism of lead poisoning, and dictate many alterations in the strategy of the campaign against it. Briefly, they transfer the main avenue of entrance of the poison from the alimentary tract to the lungs. They find that where lead is there also is much dust, containing sometimes as much as 10 per cent. of metallic lead. This dust is inhaled by those who have to work in the atmosphere which contains it, and it is freely absorbed into the system through the lungs. The observations, statistics, and experiments by which Legge and Goadby are led to conclude that this is the principal cause of lead poisoning must be read in detail by those for whom this novel suggestion requires stringent proof. The chain of reasoning is very interesting, and expounded in a thoroughly scientific spirit. Hitherto

[1] Lead Poisoning and Lead Absorption. By T. M. Legge, M.D. Oxon., and K. W. Goadby, M.R.C.S. Eng. London: Arnold. Price 12s. 6d. net.

it has been supposed that lead poisoning is acquired chiefly through eating with dirty hands to which particles of lead may adhere; in fact, the digestive system has been regarded as the portal of entrance. Legge and Goadby do not deny that lead can enter the system thus, but they do deny that much is absorbed this way, and the importance of their work lies in its application. Regulations for the washing of hands before meals are of little use if these authors are right, whereas anti-dust measures are essential. Such measures are fully explained in the text, and it is stated that their adoption has already been followed by great improvement. It has always been known that in some trades lead poisoning is much more uncommon than in others, though the metal may be as much used in one as the other. Legge and Goadby explain that in those industries where much dust is formed poisoning is frequent; in those where little dust is formed poisoning is rare. There are many other interesting points dealt with in their monograph, of which the question of predisposition is only one. Individual susceptibility and immunity they believe to exist. Given the same opportunities for infection, a person showing early signs of lead absorption may be regarded as susceptible—obviously a point of great importance in considering the future of a young workman who has had his first attack. Again, many workers become gradually tolerant, and in time can resist much larger doses than they at first could, but the tolerance thus developed is easily upset by intercurrent disease or sudden increase in absorption, and an attack of poisoning results. Enough has been quoted to prove that these authors have deserved well of their profession for an original book and for all the laborious work which made the book possible, and not of their profession only, but of the State as well.

THE VACCINE TREATMENT OF TYPHOID FEVER.

IN an annotation in our issue of Jan. 4th, p. 48, we referred to the remarkable results obtained by a French observer in the prevention of typhoid fever by vaccination. In the *American Journal of the Medical Sciences* for October, 1912, Dr. J. G. Callison has reported results obtained in the treatment of the disease which, though not so striking, are very favourable. The reaction produced in health by a typhoid vaccine follows the same curve as that due to other antigens. Antibodies are not produced for about eight days; after that until the twenty-fifth day they are rapidly produced. In the treatment of typhoid fever an earlier effect is observed, because a reaction has already been initiated by the infection. Dr. Callison has treated 38 cases with vaccines. Five deaths and one relapse occurred. The causes of death were femoral phlebitis, double lobar pneumonia, meningococcus septicæmia, ruptured spleen, and asthenia. A marked lowering of the temperature curve was observed and with this a change in the appearance of the patients. They lost the "typhoid facies" and became bright, their appetite returned sooner, and they slept better than patients treated by the ordinary methods. Relapses and complications were fewer. Cases treated early gave the best results. Dr. Callison therefore recommends that blood culture, the method by which a positive diagnosis can be made earliest, be used whenever possible. The severity of the disease is not a contra-indication to the treatment. Dr. Callison collected a series of 323 cases of typhoid fever treated with vaccines. There were 17 deaths (5·2 per cent.) and 20 relapses (6·2 per cent.). Subsequently Meakin and Foster of Montreal reported a series of 41 cases and compared them with other cases treated in the same hospital without vaccines. In the former cases the deaths amounted to 2·4 per cent., the relapses to the same, and the complications to 5 per cent., while in the latter the figures were respectively 10, 13, and 42 per cent. The duration of the fever in the former cases was 28 days; in the latter 37 days. Seventeen patients were vaccinated during the first two weeks, and only three of these required a second inoculation. The initial dose was 1000 millions bacilli. Eight days later, if necessary, 1500 millions were given, and at the end of another eight days, if the fever continued, 2000 millions were given. In many of the cases the temperature fell so rapidly as to resemble a crisis. On the toxic symptoms the beneficial influence was almost constant. Dr. Callison uses a dosage of a totality similar to that just mentioned, but different in distribution, which he thinks better. He begins with 500 millions, and at intervals of 14 days, as long as is necessary, gives a dose increased by 100 millions. He uses a stock vaccine, as it causes less local reaction and is less toxic than an autogenous vaccine and is quite as efficient. The injections are made hypodermically over the insertion of the deltoid or over the tensor vaginæ femoris. The local reaction consists of redness, swelling, and brawny induration. It passes away in about 24 hours. It is well to warn patients that the arm will be very sore. The systemic reaction is slight; in a few cases a rise of temperature was produced, but in none were the symptoms aggravated.

THE REFINEMENTS OF DETECTION.

IN spite of the extreme delicacy of many scientific tests, notably those in which the services of the spectroscope and the electroscope are enlisted, the eye and the nose are capable, in regard at any rate to some substances, of an equal refinement of detection; they can detect quantities as inconceivably small. When we reflect, for example, how great is the tinctorial power of some of the modern aniline dyes, it must be obvious that in very great dilutions when the eye still observes colour the quantity of material present must be quite microscopic. Comparatively recently there has been introduced a series of dyes which ousted the eosins; they are known as the rhodamines, and yield magnificent red shades. The dye classed as G extra continues to show distinct colour obvious to the eye in a solution when there can be present only, and probably less than, one ten-billionth of a gramme. This means that in a milligramme of solution there is present at least one particle of colour substance weighing less than 0·000,000,000,000,1 gramme. The sense of smell is capable of detecting even smaller amounts of particles, for the presence of otto of roses in the air is readily recognised when only one-third of a thousand-billionth of a gramme (0·000,000,000,000,000,333 gramme) of the volatile oil is present in a cubic millimetre of air. It seems evident from this that the mere existence of an odour in the air can have very little chemical significance, and that any physiological effect it may produce (e.g., nausea) is a depressing one upon the nervous system, and not that of a toxic substance introduced into the blood stream. When the extremely minute quantities of substances which it is possible thus for the optic and olfactory nerves to detect are compared with the capabilities of, say, the spectroscope, it will be found that the human mechanism compares favourably with this instrument in regard to its powers of detection. The spectroscope is generally regarded with wonder because of the very minute quantities of substances which it will disclose. But when we find that in the case of neon it will detect the presence of 0·000,005 cubic centimetre, and in other examples 0·000,06 milligramme of strontium, 0·000,01 milligramme of lithium, and 0·000,000,3 milligramme of sodium, it will be seen that these quantities are gross compared with the detective powers of the human nerves. In, however, the scientific instrument used in electrical observations, the electroscope, the human agencies meet with a formidable competitor, for a

delicate electroscope is nearly a million times more sensitive than a spectroscope. The modern instrument will detect one millionth of a millionth of a milligramme of radium. These refinements of detection suggest that they are capable of laying bare particles which are not matter at all, but energy; the infinitesimal is detected and weight, as we ordinarily know it, can scarcely enter into the calculation.

THE CRYSTAL SPACE-LATTICE.

A DISCOVERY which will bring joy to the hearts of crystallographers and to the supporters of the atomic and molecular theory has comparatively recently been announced, for it would appear that ocular evidence has been obtained which substantiates the modern theory of crystal structure based upon the position of the atoms. This theory assumes that the crystal is homogeneously built up, its structure being founded upon a complicated regular point system, the points of which represent the chemical elementary atoms. It has been found that by passing the Roentgen rays through a crystal (e.g., zinc blende) an interference photograph is obtained of the space-lattice of the crystal structure. Elliptical spots are produced showing a cubic symmetry, a diagonally or diamond-wise square. The tetragonal nature of the axis of symmetry along which the rays were travelling is thus plainly indicated in the photographs. It is not the arrangement in space of the atoms that is shown, but the underlying space-lattice, which is arrived at by taking the atoms of the same chemical element which are similarly situated throughout the whole structure. According to a recent article in *Nature* upon this subject by Mr. A. E. H. Tutton, D.Sc., F.R.S., crystallography has thus afforded to its sister science chemistry the first visible proof of Dalton's atomic theory, leading us to a practical knowledge of the hitherto mysterious world where Dalton's atoms and molecules reign supreme.

SIR EDWARD HENRY ON THE CARRYING OF PISTOLS.

AT the recent session at the Old Bailey Albert George Bowes, the man who attempted to murder with a pistol Sir Edward Henry, the Chief Commissioner of Police, was convicted and sentenced to 15 years' penal servitude. Probably Mr. Justice Darling defined the prisoner's condition accurately when, in passing sentence, he expressed the opinion that he was sane enough to be held responsible criminally for his actions when he fired at Sir Edward Henry, but that he was "not so stable in his intellect as the ordinary run of people." In prison the mental condition of Bowes will, no doubt, be carefully observed during the currency of the long sentence passed by the learned judge, which, however, as his lordship expressly stated, was curtailed in consequence of Sir Edward Henry's eloquent and manly appeal for mercy on his assailant's behalf. It was after the Chief Commissioner of Police had made this appeal that Mr. Justice Darling asked a question with regard to the right of the prisoner to carry a pistol, a right enjoyed, as will be remembered, by anyone who takes out an ordinary gun licence. Sir Edward Henry gave an answer more interesting than any direct reply to the judge's question when he said, "It is essential, in the interests of the public, that the possession of and traffic in pistols should be much more strictly regulated than now. It is quite practicable; in fact, there is a Bill drafted which would, I am sure, do all that is needed. That Bill was drafted after the Sidney-street affair, but has not been proceeded with." Sir Edward Henry added that the Bill, which had been submitted to his inspection, provided restrictions which, in his opinion, are "absolutely essential" for the protection of the public. It is satisfactory to note the confidence of this high authority in the practical possibility of enforcing the measure contemplated, and after all that has been written on the subject in THE LANCET it is hardly necessary to add that the introduction of the Bill referred to in the House of Commons will be awaited with interest. If it is not forthcoming before long the only inference possible will be that nothing short of the assassination of a Cabinet Minister by some irresponsible fanatic will produce legislation. May we add, in these days of frantic party spirit, that this is not a hint?

THE TWELFTH INTERNATIONAL CONGRESS OF OPHTHALMOLOGY.

THIS Congress will be held in St. Petersburg from August 10th to 15th, 1914, and although 18 months elapse before that date is reached there is much to be said for early notification of the meeting. Time is thus given for the preparation of thoroughly important and responsible reports from all parts of the world on the many ophthalmological questions which are now at issue among both clinicians and pathologists. For example, we observe that Lieutenant-Colonel Henry Smith is one of the corresponding members for India, and the medical profession would certainly like to have an international verdict to assist in the decision as to the position which his well-known technique should occupy in teaching and practice. Again, among the subjects officially selected at the last Internaticnal Congress at Naples for world-wide consideration is the etiology of trachoma; here there is obviously room for much detailed work before conclusions are arrived at. The Congress is under the direct patronage of the Czar, and the office is at the Ophthalmic Hospital, Mochowaja, 38, St. Petersburg, where the president of the Central Bureau and of the International Organisation Committee, Professor L. G. Bellarminof, may be addressed. French is really constituted the language of the Congress, for although contributions may be sent in in French, English, German, Italian, Spanish, and Russian, they must be accompanied by abstracts in French.

THE BLOOD-SUCKING APPARATUS OF TICKS.

Dr. Adolph Eysell, whose minute account of the emergence of a mosquito from its larva we mentioned in THE LANCET of June 17th, 1911, p. 1653, has recently, in the *Archiv für Schiffs- und Tropen-Hygiene*, described how a tick, like Ixodes, pierces unnoticed the skin of its host, and yet establishes a hold so firm that it cannot be detached without the tearing out of part of the blood-sucking mechanism. The tick lights very gently on its victim, pushes through the skin its sharp chitinous (doubly refracting) hypostome, so sharp it is that its puncture is not felt, then with a twisting motion the barbed mandibles are alternately advanced beside it, and their position gradually deepened, until at last the tick hangs in a funnel-shaped depression in the skin of the victim, and the fine tube formed by apposition of the hypostome and mandibles has reached the blood-bearing stratum of the host's tissues, when by capillarity blood passes up the slit between the three mouth parts into the pharynx of the tick. The corresponding mechanism by which another member of the tick family, Ornithodoros moubata, bores through the skin of its host was very clearly described and illustrated in Professor C. J. Martin's second Horace Dobell Lecture which appeared in our last issue. Dr. Eysell goes on to show that the channel through the blood-sucking apparatus has a further use. The ticks have no penis. Seminal fluid is carried by the very mobile proboscis off the male from his own genital opening to the vagina of the female, within which he anchors his proboscis

by the same mechanism as she hers in the skin. During this act of copulation his position in relation to her so closely resembles her own to her victim, and the male so differs in appearance from the female that the first observer of the act, de Geer, in the middle of the eighteenth century, described the male as a blood-sucking parasite of the female.

TEARING OF THE VENA CAVA DURING REMOVAL OF PYELONEPHROTIC KIDNEYS.

IN the *Boston Medical and Surgical Journal* of Oct. 24th, 1912, Dr. A. T. Cabot has reported two cases in which the vena cava was torn during operation. The means by which the accident was successfully treated are instructive. A woman, aged 35 years, the mother of six children, had suffered for ten years from dull pain near the right costal border. Six years ago she noticed a lump there, and it had lately been increasing. Micturition was frequent and the urine has been cloudy for some years. Examination showed a large elastic tumour extending from the right costal border to the pelvic brim and across the middle line. With the cystoscope jets of cloudy urine were seen issuing from the right ureter. A large pyelonephrotic kidney was removed. At its upper, inner, and posterior parts it was very adherent. There were large veins in its posterior part. These were clamped and separated from the capsule. It was found that one of these veins was the collapsed vena cava, which had a rent in its wall where the renal vein had been separated. This was closed by two silk stitches. The adhesion of the sac was so firm that a considerable portion of peritoneum came away with it, leaving a gap beneath the liver which could not be closed. Wicks were so placed as to prevent the escape of bowel, and after the wound was closed a tight binder was applied. Recovery was uneventful. In the second case a woman had an enlarged and tender right kidney extending down to the level of the umbilicus and over to the middle line. By a long incision from the last rib to the outer border of the erector spinæ the tumour was reached, a trocar was introduced, and about three pints of thin pus escaped. This left a large, flabby, collapsed sac, having but little appearance of kidney substance. It seemed that its removal ought to be easy, and it shelled out without much difficulty until the inner posterior aspect was reached, where it was found firmly adherent to the psoas muscle and the great vessels, making separation with the fingers difficult. This was done as carefully as possible. Considerable oozing followed and was stopped by packing. When the tumour was finally freed with difficulty and lifted into the wound what appeared to be the pedicle was found to contain only fatty tissue, and was tied and separated, and the kidney was lifted out. On removing the packing extensive venous hæmorrhage came from the depth of the wound. This was found to come from a couple of small openings in the side of the vena cava, apparently where the renal veins had been torn across in removing the tumour. These were clamped, and an attempt was made to suture the opening in the depth of the wound, but the patient's condition made this impossible. Clamps were therefore placed on the vena cava. When they were in position so as to control the hæmorrhage they included about half of the vessel. The wound was closed and a large drainage-wick was passed down to the clamps. A large dressing was applied so as to protect the handles of the clamps from pressure. After the operation the patient was very exsanguine and was given saline injections. She slowly recovered. After a week the clamps were removed. Examination of the specimen showed great dilatation of the pelvis and calyces, with no evidence of a ureteral opening. But little kidney substance was left. The sac was lined with granulation tissue which yielded a pure culture of the colon bacillus. In the first case the condition of the kidney seemed to be the result of a calculus; in the second, of mobility associated with infection by the colon bacillus. The difficulty of shelling out pyelonephrotic kidneys is illustrated by what happened in both cases. The occurrences point to the advantage of operating in two stages—opening and draining before proceeding to removal. The subsidence of the inflammation after drainage causes great shrinking of the tumour and some loosening of adhesions. In operating on the right kidney there is greater danger of injuring the vena cava than in operating on the left. The ease with which the vena cava was sutured in the first case is noteworthy. The patient's abdominal wall was thin and the parts could readily be brought into view. The opposite condition existed in the second case and prevented suture. However, with the clamps including a large part of the vessel, nature succeeded in forming a cicatrix which held when they were removed.

THE SECOND INTERNATIONAL CONGRESS OF LIFE-SAVING AND PREVENTION OF ACCIDENTS.

IN 1908 the First International Congress for Life Saving Work was held at Frankfort, and after the Congress it was decided to continue the work as a permanent institution. Accordingly it has been arranged to hold the second Congress this year during the second week of September in Vienna. The organising committee, which began its work last June, decided to extend the scope of the Congress by adding the Prevention of Accidents to Life Saving Work as an object of study. In connexion with this Congress a permanent international committee office is to be established as a central depôt or inquiry office for all matters connected with these subjects. The Congress will be under the patronage of His Imperial Highness the Archduke Leopold Salvator. All speakers will be permitted to address the meeting in their native language, but motions and papers must be translated into German or French before being handed in. The following sections will be held: (1) Medical and Surgical First Aid in Accidents; (2) Training of Non-professionals in First Aid; (3) Life-saving and Ambulance Work in Town and in the Open Country; (4) In Land Traffic; (5) At Sea and on Inland and Coast Waters; (6) In Mines and Similar Works; (7) Among Firemen; (8) On Mountains; (9) Ambulance Work and Sport; and (10) the Prevention of Accidents in General, among Workmen, and in Regard to Public Traffic. Notice of intention to read papers must be given before March 1st to the General Secretary, Congress Office, 1 Radetzkystrasse, Vienna III. Further particulars can be had on application to Mr. S. Osborn, F.R.C.S., Permanent Secretary to the British Section of the Congress, Constitutional Club, London, W.C.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON).—A bequest has been received from the late Miss Mabel Sharman-Crawford to found a scholarship to bear her name. The scholarship, offered annually, of the value of £20 a year for four years, will be awarded for the first time in July, 1913, on the result of an examination in biology, chemistry, and physics. Other scholarships to be awarded in July, 1913, are the Isabel Thorne Scholarship, value £30, and the St. Dunstan's Exhibition, value £60 a year for three or five years. The Agnes Guthrie Bursary for Dental Students, value £60, and the Mabel Webb Research Scholarship, value £30 a year for one, two, or three years, will be awarded in September, 1913. The Dr. Edith Pechey-Phipson Post-Graduate Scholarship, of the value of £40, will be awarded in June, 1913. Full particulars can be obtained from the secretary of the Medical School, 8, Hunter-street, W.C.

HISTORY AND NATURE OF THE NAPOLEONIC SPECIMENS IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, ENGLAND.[1]

BY PROFESSOR ARTHUR KEITH,
CONSERVATOR OF THE MUSEUM AND HUNTERIAN PROFESSOR OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Present Views in regard to Napoleon's Illness and Death.

IT is generally agreed that all the documents relating to the illness and death of Napoleon in St. Helena have been so thoroughly studied that the conclusions reached by modern distinguished writers, such as Lord Rosebery and H. Paul Frémeaux, are to be regarded as final verdicts. The conclusions they have reached are: (1) that Napoleon died from cancer of the stomach; (2) that his physicians were incompetent, all of them failing to make even an approximately accurate diagnosis; and (3) that the specimens in the Royal College of Surgeons are not authentic. My aim is to prove (1) that the specimens in the Museum of the Royal College of Surgeons are authentic; (2) that while Napoleon suffered from a cancer of the stomach at the time of death there is convincing evidence in the symptoms of his long illness, in the condition found in the body when it was examined after death, and in the morbid appearances of the museum specimens, to show that he was also the subject of a second disease—an endemic fever, causing symptoms of inflammation of the liver, and similar in its nature and effects to a chronic form of Mediterranean fever. The symptoms of the fever endemic to St. Helena masked the symptoms of cancer and misled the physicians of St. Helena, just as a similar condition would mislead the majority of physicians of to-day.

Description of the Specimens.

The two specimens are parts of the lower region of small bowel; they are opened out, thus appearing like tags of dusky leather; the larger specimen could be covered by six postage stamps. On the mucous coat of each specimen is seen a raised rounded plaque, situated on the side of the bowel opposite to the attachment of the mesentery. The plaque on the larger specimen is a little over half an inch in circumference. The situation and area of the plaques can also be distinguished on the peritoneal surface of the bowel. They contain effused blood and dilated vessels. At the post-mortem examination such plaques should have been apparent on the surface of the bowel as reddish spots or blotches. The specimens were originally in the museum of Sir Astley Cooper. After his death in 1841 his collection was acquired by the College, and with it the Napoleonic and several other specimens of great historical value. The following entry is in the MS. catalogue of Sir Astley Cooper's Museum: "Incipient Fungus in the Glands of an Intestine. Napoleon. Barry O'Meara to Sir Astley Cooper." In 1883, while revising the catalogue of the Museum, Sir James Paget made the same diagnosis as Sir Astley Cooper had made—namely, "a plaque of cancer projecting about one-eighth of an inch above the mucous membrane." Both Sir Astley Cooper and Sir James Paget regarded the plaques as cancerous. Sir James Paget gave the following reasons for rejecting the history attached to the specimens: (1) Antommarchi, who performed the necropsy, described the mucous membrane of the bowel as apparently healthy; (2) Dr. Barry O'Meara was recalled three years before Napoleon's death (a fact of which Sir Astley Cooper could not have been ignorant of); and (3) the watch at the necropsy was so strict that such specimens could not have been abstracted.

Dr. Paul Frémeaux, the author of "The Drama of St. Helena," and the highest authority on the facts relating to the period of Napoleon's illness, rejects the specimens as authentic documents for the same reasons as were given by Sir James Paget. He is emphatic as to the impossibility of their having been abstracted at or after the necropsy; he gives the additional reason that Sir Astley Cooper would have given fuller details if they had been genuine. This objection can be easily met; in not one of his 1500 specimens did Sir Astley Cooper give a full history; even in the case of his most important historical specimens the history consisted of only his diagnosis and the name of the patient. There were very good reasons why Sir Astley Cooper, the Court surgeon, could not afford to give all the details relating to these specimens. Dr. T. H. Arnold Chaplin also regards the specimens as "doubtful."

Microscopical Examination of the Plaques.

Three years ago parts of the plaques were excised, cut into several sections and stained by different methods for microscopical examination. The sections were examined by Mr. Shattock; he found no evidence in them of cancer. Sir Frederic Eve had also examined the plaque-like growth nearly 20 years previous to the present examination and came to the same conclusion as Mr. Shattock—that the plaques were not cancerous. Mr. Shattock's detailed report concludes thus: "There can be no doubt that the two lesions represent a solitary and an agminated gland of the lesser size. Their limitation to the submucosa, their circumscription and the extension of the mucosa completely or partly over them combine to show this. In form and size they resemble such glands when enlarged from inflammatory or hyperplastic conditions. In the sections stained with cresyleicht violet, the presence of bacteria, chiefly short stout bacilli (B coli), is very obvious." The specimens in the Museum of the Royal College of Surgeons are not secondary growths of cancer, but inflamed, hyperplastic, enlarged patches of the lymphoid tissue which abounds in the lower part of the small intestine and which is so often affected in general infections of the body.

The Authenticity of the Specimens.

The authenticity of these specimens, in the first place, turns on the reliability of Sir Astley Cooper. He was the dominant surgeon in London during and after the time of Napoleon's illness and death; he was the favoured Court surgeon; he was medical adviser to Lord Liverpool, the Prime Minister of the time; he was acquainted with Lord Bathurst, who was responsible for the care and keeping of Napoleon. During his long and busy professional life he continually collected specimens for his museum. On his return to London from St. Helena Dr. O'Meara settled in the Edgware-road, London; he took an active part in public affairs; the lives of Cooper and O'Meara must have crossed. Those who reject the history which Sir Astley Cooper has given of those specimens must suppose (1) either that Dr. Barry O'Meara had foisted spurious relics of Napoleon on the great surgeon; (2) or that Sir Astley Cooper deliberately allowed a misleading history to be attached to them. Anyone acquainted with the reasons which lead men to form scientific medical museums—Sir Astley Cooper's certainly deserves to be classed as such—will realise the absurdity of the second supposition, and no one can well suppose that a man so keenly awake to the foibles and impostures of mankind as Sir Astley Cooper would be put upon by Barry O'Meara. One must suppose that Barry O'Meara satisfied Sir Astley Cooper as to how the specimens came to England and into his possession.

Account of the Necropsy by Dr. Antommarchi.

The post-mortem examination was performed by Dr. Antommarchi who was trained under, and became assistant to, Paul Mascagni, the leading European authority on the anatomy and pathology of the human body during the opening period of last century. The surgeons of the army and navy who looked on and drew up a very concise official account of the post-mortem examination in St. Helena could not rival him in the kind of knowledge required when the necropsy came to be made. He drew up a detailed account; without Antommarchi's report we should know only the bare fact that in the opinion of the official reporters Napoleon died from cancer of the stomach. In Antommarchi's description of the appearance of the bowel the following sentences occur: "*In the peritoneal surface and in the folds of peritoneum I observed small spots and patches of a pale red colour, of various dimensions, and scattered at some distance from each other.*" It has already been pointed out that the specimens now in the Museum of the Royal College of Surgeons would have given exactly the appearances described by Antommarchi at the necropsy on Napoleon's body. The objection, then, that no mention in the post-mortem account

[1] Abstract of Hunterian Lecture delivered by Professor Arthur Keith before the Hunterian Society on Jan. 8th, 1913.

is made of morbid appearances, such as are shown in the Museum specimens, must be abandoned.

In the sentence which follows the one just quoted, Antommarchi adds: "*The mucous membrane of this canal* (the small intestine) *appeared to be in a sound state.*" How can one reconcile the two statements? The sentence which follows serves to explain. "*The large intestine*" (he is referring to its mucous or lining membrane) "*was covered by a blackish, very viscuous matter.*" In a modern post-mortem department, with ample supply of sinks and water, it would be easy to cleanse the mucous membrane of the bowel from end to end and wash away the viscid adherent matter. But at Longwood there were no sinks; water had to be carried by hand from a distance of over a mile. Does anyone suppose, with the lay representatives of Napoleon and of Sir Hudson Lowe looking on, and a satisfactory cause of death already ascertained, that Antommarchi would undertake the tedious and objectionable duty of cleansing the whole length of the bowel—even supposing such an operation were possible? Only perfect cleansing would have revealed the raised plaques. It was the cursory nature of the examination which induced him to write that the mucous membrane "appeared to be in a sound state."

Relation of Antommarchi to O'Meara.

If anyone removed parts of the bowel it must have been Antommarchi; he is the only one to leave any mention of the curious red spots and blotches which were seen at the post-mortem examination. It is said he had no opportunity of removing them. Those who, on such occasions, have to serve the cause of science by stealth will not agree as to the impossibility of their abstraction. There is no doubt Antommarchi abstracted and kept the mask of Napoleon's face taken by the English surgeon Burton after the post-mortem examination was performed—removed it when Routledge is supposed to have been on watch. He was determined to take the heart and stomach to Europe. A space of 30 hours elapsed between the beginning of the post mortem and the sealing down of the coffin. Antommarchi was at home at Longwood; the officer on watch was a stranger to the place. The silver vessel in which Antommarchi placed the heart and stomach, and if he wished he could have placed smaller parts with them, stood accessible to the Italian anatomist for at least 24 hours. The opportunity was neither wanting nor, from what we know of Antommarchi, the will.

Why should Antommarchi take such specimens, and why should he give them to O'Meara? Before proceeding to St. Helena in the autumn of 1819—Napoleon died on May 5th, 1821—Antommarchi came to London, and for a space of over two months saw O'Meara and consulted with him about Napoleon's case "almost every day." Antommarchi was an anatomist and pathologist, not a physician; he accepted whole-heartedly O'Meara's diagnosis that Napoleon suffered from the form of hepatitis endemic to St. Helena. He came to hold O'Meara's opinion that Napoleon was being killed by the climate of St. Helena. Even after the post-mortem examination revealed cancer of the stomach he still asserted that death was due to a "gastro-hepatitis." When, after Napoleon's death, Antommarchi returned to London in August, 1821, O'Meara was there. He had written to the *Morning Chronicle* asking the British public not to accept or believe the official announcement of Napoleon's death from cancer as it was not signed by the person best qualified to sign it—Antommarchi. Although I have been unable to find any document which shows that Antommarchi and O'Meara met when they were both in London in August, 1821, one cannot resist the belief that they did meet; in a sense they were fellow conspirators, they shared in the public eye a common disgrace. O'Meara, we know, collected Napoleonic relics; they were sold by public auction when he died in 1836. Antommarchi had a profound belief in O'Meara and was indebted to him; they had a common language—Italian. It is possible, too, that Antommarchi believed these trivial specimens might throw light on Napoleon's disease. At least it is easy to see how such specimens could come to O'Meara; we have Sir Astley Cooper's word for it these specimens came into the possession of O'Meara. The specimens are of so uncommon a nature that it must appear scarcely credible to medical men that they could have been obtained in any manner other than the one suggested here.

The Nature of Napoleon's Illness.

There is another line of evidence which serves to confirm the authenticity of the specimens. It has always been felt that the long duration of Napoleon's illness—four and a half years—and the symptoms during the earlier stages of the Emperor's illness were incompatible with a disturbance of health solely due to cancer of the stomach. The French physician, Dr. Héreau, so long ago as 1829, made that aspect of Napoleon's case very clear; he supposed that the symptoms were due to an ulcer of the stomach. Dr. Boudouin a few years ago came to a somewhat similar conclusion, while quite recently Dr. Arnold Chaplin has accounted for Napoleon's anomalous symptoms by supposing that the illness commenced with an ulceration of the stomach, which ultimately became cancerous in nature. The outstanding features of Napoleon's illness were recurrent bouts of fever of the same nature as were then prevalent in St. Helena. No ulceration of the stomach could produce the symptoms of Napoleon's illness unless the ulcer was part of a general infection of the body. The tonsils became enlarged during the attacks; the lymphatic glands of the groin were affected; the feet and legs became œdematous and swollen. We may safely infer that the whole lymphatic system of the body including the lymphoid areas of the intestine were affected. There were symptoms of inflammation or of an infection of the great bowel. All the recognised symptoms of inflammation of the liver were present—pain in the region of the liver, pain behind the right shoulder, hardening and swelling in the region of the liver, hiccough and cough, showing the diaphragm was also affected during the attacks of fever. At the post-mortem examination the most certain signs of a former inflammation of the liver were found; its upper surface was adherent to the diaphragm by adhesions of old formation; it was enlarged and congested, so was the spleen. In the region of the cancer the stomach was adherent to the under surface of the liver, but such an adhesion cannot explain the generalised adhesion on the upper surface of the liver: there were no secondary deposits in the liver. Neither an ulcer nor a cancer of the stomach could produce the adhesions between the liver and diaphragm. Only the hepatitis diagnosed by O'Meara, Stokoe, and Antommarchi can explain that adhesion.

Explanation of Napoleon's Symptoms.

If, on the other hand, the authenticity of the specimens is accepted, the symptoms of Napoleon's illness, the condition found after death, and the alleged incompetency of the medical men become understandable. The symptoms were those of an infection by one of those forms of micro-organisms which we are only now coming to recognise and identify. The invading agent appears to enter the body by the bowel—often the great bowel. Diarrhœa or dysentery may be the most prominent symptoms, the liver becomes secondarily the seat of infection and inflammation. The lymphoid system of the intestine becomes hypertrophied and diseased in its attempts to protect the body from the infection. The constantly recurring attacks of fever show that Napoleon was the subject of infection.

All the sources of endemic tropical disease were present in St. Helena. The water-supply was obtained from a distance and exposed in open vessels; the residents at Longwood had to protect themselves from gnats; rats abounded there, and goats were kept for their milk in St. Helena, but whether these goats came from the Mediterranean area or not has not been proved. Sir William B. Leishman, however, has informed me that all the symptoms manifested by Napoleon during life and the appearances found in his body after death, with the exception of the cancer in the stomach, are those which are found in certain chronic forms of Mediterranean or undulant fever. It is not suggested that the illness was Mediterranean fever, but a form of illness of a similar nature.

It will thus be seen that these specimens are almost certainly authentic. We have Sir Astley Cooper's word for it that they came to him from O'Meara; it has been shown that Antommarchi and O'Meara were on very friendly terms, and were together in London after Napoleon's death; morbid appearances, such as are shown by the specimens, were seen by Antommarchi at the necropsy, and that he had opportunities of taking them. If we accept them as authentic, then the complex nature of

Napoleon's illness becomes apparent; his symptoms are explained; he was, as his physicians supposed, a subject of the form of hepatitis endemic to St. Helena. The necropsy showed that he also had become the subject of his father's illness—cancer of the stomach—a condition which was masked and overshadowed by his primary disease.

THE HEALTH OF THE ARMY IN 1911.

(Concluded from p. 121.)

The Mediterranean Area.

THE stations in the Mediterranean area are Gibraltar, Malta, Cyprus, and Egypt.

At *Gibraltar* the strength of the garrison was 3806, the admissions to hospital were 388·9 per 1000, the constantly sick 34·62, and the deaths 2·63. The death-rate was considerably lower than the quinquennial average (1906–10) 3·77; the other rates were slightly higher. There were 46 admissions for enteric fever and 2 deaths. This number of admissions was higher than in any year for the last 20 years, but the type of the disease was mild, only 2 cases being fatal: 43 of the cases occurred in July, August, and September, there being an outbreak at the same time among the civil population. At Linea there had also been cases in May and the following months. Ice-creams were suspected, and were found to be contaminated with excretal organisms. It was also found that the "sanitary water," which is used for ablution and the washing of cooking and messing utensils, showed signs of similar pollution. As this sanitary water consists partly of sea-water pumped up from near the Waterport wharf, adjacent to a sewer outfall, such pollution is not to be wondered at. After changing the intake of the sanitary water, cleaning and disinfecting the water tanks, and excluding the ice-cream vendors, the outbreak came to an end. Regulations are now issued for the control of the ice-cream trade. New married quarters have been completed and the electric light installed at Europa and Windmill Hill Barracks.

In *Malta*, where the strength averaged 6686, the admission rate has been 381·4, the constantly sick-rate 22·52, and the death-rate 2·69 per 1000, all figures well below the quinquennial averages of 423·9, 27·02, and 2·88 respectively. The invalids sent home only numbered 9·72 per 1000, compared with 17·53 in the period 1906–10. There were 10 cases of enteric fever, all sporadic, and 1 case of Mediterranean fever, an officer residing in Valetta, "due to goats' milk used inadvertently." Sandfly fever caused 125 admissions, no deaths. Captain P. J. Marett, R.A.M.C., has been continuing his investigations on Phlebotomus flies, of which four species, or varieties, are now recognised in Malta. The chief preventive measures appear to be to keep all walls in good repair near inhabited buildings, to use wire fencing instead of stone walls, and to keep ground ventilators in buildings covered with wire gauze of fine mesh. Cholera was imported from Tripoli by refugees, and 112 cases occurred among the Maltese inhabitants. Preventive measures that had been previously arranged were immediately carried out, and not a single soldier was attacked. The public water-supply had been found to be polluted in 1910, with a resulting outbreak of enteric fever. Improvements were effected, and iron pipes substituted for the old masonry aqueducts, which had been allowed to survive too long. A committee is considering the whole question further, and it is to be hoped that the matter will be gone into thoroughly. In so thickly inhabited a city as Valetta purity of water-supply is an absolute necessity. Until recently there seems to have been no suspicion on this point. The sewage farm of the civil lunatic asylum, situated near one of the catchment areas of the supply, has been abolished. The use of dry earth in barrack latrines has been given up and a weak disinfectant substituted. Electric lighting is now installed in the principal barracks. A new hospital on a healthy and airy site at Imtarfa has also been sanctioned, to take the place of that at Cottonera.

A company of infantry has been stationed in *Cyprus*. The health was good. Malaria accounted for 11 admissions.

The average strength of the troops in *Egypt* was 5544. The admissions to hospital numbered 484 per 1000, the constantly sick 31, and the deaths 4·15. These ratios are all lower than in 1910, and compare favourably with those for the quinquennium 1906–10, which were 662·2, 42·59, and 4·66 respectively. Enteric fever caused 14 admissions and 1 death, and dysentery 37 admissions and 2 deaths, both diseases being more prevalent than in 1910. There were 48 cases of pneumonia, many occurring at Abbassia, attributed to chills and infected dust. An outbreak of infectious sore-throat at Abbassia in October caused 42 admissions, of which 31 came from one company. A diphtheroid organism was isolated from throat swabs, and the illness was attributed to a sodden condition of the ground in front of the barrack room affected, where also a disused drain was discovered on digging. The health of the women and children continues to be unsatisfactory, the admissions for the former having been 1378 and for the latter 1726·6 per 1000, with death-rates of 10·31 and 25·39 respectively. Conjunctivitis, bronchial catarrh, and pyrexia were the chief causes of sickness in children. Various sanitary improvements have been carried out, but the Jewell system of water purification has not yet been completed at Cairo. The municipal water-supply at Alexandria is now so satisfactory (after Jewell treatment) that barrack filters have been withdrawn. The health of the troops at Khartum has been satisfactory, the constantly sick rate being 20·73 per 1000, with no enteric fever or dysentery, and only 17 admissions for malaria.

India.

The average strength of the European troops serving in India was 72,371. The health statistics of this force during 1911 have been even more favourable than those of the year preceding, which had been a record over all previous returns. This appears from the following table, which also shows the extraordinary change that has taken place during recent years in each particular, in ratios per 1000:—

	Admissions.	Constantly sick.	Deaths.	Invalids.
1889–98 ...	1464·7 ...	89·61 ...	16·43 ...	14·78
1906–10 ...	749·7 ...	43·07 ...	7·93 ...	7·81
1910	576·5 ...	31·93 ...	4·66 ...	6·51
1911	524·7 ...	28·81 ...	4·89 ...	6·20

As compared with 1910, there has been a fractional increase in the death-rate; in other respects the figures are even lower than in that year. Compared with the preceding quinquennium, the returns are most satisfactory, and if the period immediately before the South African war be taken, it is seen that the admissions are little more than one-third, the constantly sick and the deaths less than one-third, and the invalids less than half, of the average of that decennium. It would be rash to say that no further improvement is to be expected, but at any rate the military medical administration in India may be heartily congratulated on the extremely satisfactory condition of things at present existing. No better testimony could be afforded of the financial advantage that results from judicious expenditure on sanitary measures and administration.

The cause of the greatest number of admissions to hospital has been malaria (90·2 per 1000), though this figure is only half that for the preceding quinquennium (182·1). Sandfly fever (19·2) and pyrexia of uncertain origin (26·4) were not especially prevalent. Venereal diseases caused 53·1 per 1000 admissions compared with 80·7 for the preceding period; digestive diseases caused 58·7 compared with 68·7 per 1000. The greatest inefficiency through sickness was due, as always, to the group of venereal diseases, for which 7·09 per 1000 were constantly sick in hospital (9·60 in 1906–10); for fevers the inefficiency was 4·47 (compared with 8·48), and for digestive diseases 2·66 (compared with 3·30) per 1000. The diseases that were most fatal were inflammation of the liver (0·48 death per 1000), enteric fever (0·30), dysentery (0·28), heart disease and aneurysm (0·28), and pneumonia (0·26). In each case there has been a marked reduction as compared with the preceding period.

The position that enteric fever occupies in the sickness and mortality statistics of the British troops in India is very different from that which it held ten years ago. In the decennium 1895–1904 the admissions averaged 22·3 per 1000, the constantly sick 3·31, and the deaths 5·62; in the quinquennium 1906–10 these ratios were respectively 11·2,

2·34, and 2·17; in the year 1911 the admissions were 2·3, the constantly sick 0·46, and the deaths 0·30 per 1000. These ratios are about half those of the year preceding, which were quite unprecedently low. Some qualification, however, has to be made. In making comparison with previous statistics the figures for paratyphoid fever have to be allowed for, this disease having been included under the heading of enteric until 1909. In the statistics for 1911 it is included under "other diseases" in Group A. We suggest that it should be shown separately next after enteric fever, as to its close relationship with which there is no doubt; its occurrence and amount are of sufficient importance to warrant separate statement. As there were 104 cases of paratyphoid fever A and B, this number should be added to the 170 cases of enteric, and the 22 enteric deaths increased by 2, to make the figures comparable with previous years. As in 1910, there has been no epidemic outbreak of enteric fever, nothing more than the occurrence of more or less isolated cases in a large number of stations. No outbreak has been attributed to contaminated water or food, and nursing orderlies in attendance on the sick have escaped attack. Two deaths are returned from paratyphoid fever, one being due to intestinal perforation; in this, and in all the other cases but one, the paratyphoid A bacillus was isolated; in the one exception bacillus B was found; the diagnosis of paratyphoid is not made unless one or other of these organisms is detected. Four explosive outbreaks of paratyphoid fever are recorded—at Bareilly, Fyzabad, Lucknow, and Jubbulpore. No food or water infection could be traced. "The incriminating factor in all the cases appears to have been the initial presence of an undetected and unsuspected infected person, indicating that in this particular disease man himself is the most dangerous factor." No less than 97 out of the 104 cases of paratyphoid occurred in men who had been inoculated against enteric fever. It especially attacks new arrivals in India. Some curious facts are related as to agglutination reactions, the question being frequently complicated owing to the patients having been previously inoculated against enteric fever. "Not infrequently the agglutination of *B. typhosus* is marked, while *B. paratyphosus A* is not agglutinated by a 1 in 10 dilution of the serum. Further, it is not unusual to find in cases of undoubted paratyphoid fever from which the A bacillus has been isolated, that the patient's serum agglutinates at one time only the *B. typhosus*, and at another time only the *B. paratyphosus*." The writer of the report emphasises the point that as a means of diagnosis the serological observations are beset with fallacies, and taken alone cannot be relied on as a trustworthy method of diagnosis. The two affections in general terms "differ only in the higher mortality and greater severity of enteric fever, and in the character of the casual [? causal] micro-organisms."

Anti-enteric inoculation is progressing steadily; 85 per cent. of the European troops have been inoculated. The ratios per 1000 of admissions and deaths for enteric fever were 1·7 and 0·17 among inoculated men, and 5·9 and 1·15 among those not inoculated. The case-mortality ratios were 10·37 and 17·18 per cent. respectively. On the other hand, inoculation against paratyphoid infection appears to have no protective effect. Of the 104 cases of paratyphoid, 97 had been inoculated. The admission rate per 1000 was 1·57 for inoculated and 0·73 for uninoculated men. Inoculation with a bivalent emulsion is recommended; also re-inoculation after two and a half years. The enteric fever depôts at the hill stations of Naini Tal and Wellington have been largely used. Not only are convalescents from enteric fever and paratyphoid sent to them, but also suspicious cases of pyrexia of uncertain origin. Of 138 cases of the latter type at Naini Tal, 5 were found to be excreting *B. paratyphosus A* in the fæces, and were considered by the officer in charge, Captain J. L. Wood, to be really paratyphoid cases. Several cases diagnosed as enteric fever were also considered to be paratyphoid. If this supposition be correct, the number of cases of enteric fever has been overstated, and those of paratyphoid understated, in the returns. The necessity for early blood culture, on second to fifth day, is insisted on to secure correct diagnosis. Not a single carrier was detected among 95 enteric cases at Naini Tal, but 12 were discovered out of 85 paratyphoid cases, only one of which, however, could be described as chronic—that is, excreting the bacillus for more than six months. No typhoid or paratyphoid fresh infection has occurred at either of these depôts—a strong testimony to the excellence and thoroughness of the conservancy arrangements.

Malaria has not been prevalent during the year, the admissions having been only 90·2 and the constantly sick 2·96 per 1000, compared with 182·1 and 6·56 for 1906–10. The danger of apyrexial malaria carriers is recognised, and we are glad to hear that the routine use of mosquito-netting at night is strongly advocated. The provision of this netting, of course, entails expenditure, and we are surprised to learn that the financial authorities have not responded to this demand; we entirely endorse the opinion expressed in the report that "the universal and systematic use of netting by troops, especially in malarial districts, constitutes our only sure means of defence against this scourge." Antimalarial measures by mosquito brigades and systematic and continuous quinine administration are also carried out. Sandfly fever shows an increase in the admission-rate from 7·1 per 1000 in 1910 to 19·2 in 1911; this must be read in conjunction with reductions in uncertain pyrexia and malaria, and really means increased accuracy of diagnosis.

There were 9 cases of plague, with 6 deaths; 3 cases (with 1 death) occurred at Allahabad, the infection being contracted in a railway carriage which natives had just vacated. Cholera caused 38 admissions and 21 deaths; 4 cases at Secunderabad were traced to consumption of bazaar supplies; 7 cases at Dehra Dun appear to have been contracted on line of march from Chakrata, cholera being present in neighbouring villages; 26 cases at Benares were traced to bazaar butter sold in a regimental dairy. Thus most of these cases and deaths appear to have been due to infractions of well-known rules laid down for the protection of the troops. Three cases of beri-beri (none fatal) were admitted, also 50 cases of multiple neuritis (with 3 deaths from cardiac failure); these cases appear to have occurred at Lebong and Calcutta among men recently arrived from Singapore, where beri-beri is common. The symptoms could not be explained as having had an alcoholic origin, and there is no reason to suspect the adequacy of the soldier's dietary in India. "It is possible that with symptoms of a multiple neuritis may be existent a pathological condition arising from disturbed metabolism, or even the prolonged ingestion of some degraded article of diet." Venereal diseases still account for about 10 per cent. of the total admissions to hospital; they are most prevalent in Burma (82·9 admissions per 1000), Poona (72·4), and Secunderabad (70·9); least in Aden (16·7), Rawal Pindi (33·9), and Peshawar (36·0). On the whole there is great improvement, there having been a continuous reduction of admissions from 89·9 per 1000 in 1907 to 53·1 in 1911.

Other Stations.

In *South Africa*, with an average strength of 10,917, the ratios per 1000 were 356·6 admissions, 21·94 constantly sick, and 4·03 deaths. The deaths are fractionally in excess of the quinquennial average (3·97); the other ratios are slightly lower. There were 22 cases of enteric fever with 4 deaths; the cases were sporadic, and no definite source of infection was traced. The dry earth system of conservancy appears to be still retained, though universally discredited, and reported against by sanitary officers. Rheumatic fever caused 107 admissions, attributed to unusually severe weather, but there were no deaths, so that it must have been a very mild form. Pneumonia caused 40 admissions, also partly due to severe weather, with 6 deaths. There were 20 cases of inflammation and abscess of the liver, of which 10 were fatal. It is regrettable that venereal disease caused 58·8 per 1000 admissions, an increase over the quinquennial ratio of 56·8, also over the figures for 1910. This is partly accounted for by a special inspection carried out at Wynberg, which resulted in 63 cases being admitted to hospital.

In the various other tropical and subtropical stations throughout the colonies and dependencies of the Empire the health of the troops was on the whole good. Some enteric fever occurred in Bermuda, and rather an excess of malaria in Mauritius. In North China (Tientsin) the troops happily escaped plague, though it was raging virulently in Peking.

The report is, as usual, admirably compiled and printed, and contains much of interest besides the points that have been touched on in these articles.

VITAL STATISTICS

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, and whose aggregate population to the middle of this year is estimated at 17,852,764 persons, 9064 births and 5285 deaths were registered during the week ended Saturday, Jan. 11th. The annual rate of mortality in the 95 or 96 towns, which had been 15·4, 15·1, and 15·7 per 1000 in the four preceding weeks, declined to 15·4 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in the 95 large towns averaged 14·5, against 15·0 per 1000 in London during the same period. The death-rates in the several towns last week ranged from 6·1 in Ealing, 7·0 in Wakefield, 7·8 in Ilford, 8·1 in Dudley, and 8·3 in Hornsey, to 21·2 in South Shields, 22·2 in Sunderland, 24·1 in Wigan, 27·3 in St. Helens, and 29·1 in Preston.

The 5285 deaths from all causes in the 96 towns were 102 fewer than the number in the previous week, and included 506 which were referred to the principal epidemic diseases, against 546 and 520 in the two preceding weeks. Of these 506 deaths, 268 resulted from measles, 72 from infantile diarrhœal diseases, 64 from diphtheria, 55 from whooping-cough, 32 from scarlet fever, and 15 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·5 per 1000, and was equal to the rate in the previous week. The deaths attributed to measles, which had been 321, 336, and 300 in the three preceding weeks, further declined to 268 last week, and caused the highest annual death-rates of 3·2 in Willesden and in West Hartlepool, 3·7 in Bath, 4·0 in Swindon, 4·2 in Acton, 4·6 in Northampton and in Wigan, 6·2 in Preston, and 6·8 in St. Helens. The deaths of infants under 2 years of age referred to diarrhœa and enteritis, which had been 79, 65, and 78 in the three preceding weeks, fell to 72 last week, and included 20 in London, 6 in Manchester, 5 in Birmingham, 5 in Liverpool, and 4 in Stoke-on-Trent. The fatal cases of diphtheria, which had been 42, 52, and 42 in the three preceding weeks, rose to 64 last week; 11 deaths were recorded in London and its suburban districts, 7 in Birmingham, 6 in Manchester, 5 in Stoke-on-Trent, 4 in Portsmouth, and 4 in Coventry. The deaths attributed to whooping-cough, which had been 64, 59, and 57 in the three preceding weeks, further fell to 55 last week, and included 22 in London, 3 in Stoke-on-Trent, 3 in Nottingham, and 3 in Liverpool. The deaths referred to scarlet fever, which had been 27, 21, and 30 in the three preceding weeks, were 32 last week; 5 deaths occurred in Birmingham, 3 in London, 3 in Preston, and 2 each in Tottenham, Leeds, and South Shields. The fatal cases of enteric fever, which had been 9, 13, and 13 in the three preceding weeks, further rose to 15 last week, of which number 4 were recorded in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been 2108, 2112, and 1954 at the end of the three preceding weeks, had further declined to 1889 on Saturday last; 202 new cases of this disease were admitted during last week, against 193, 191, and 170 in the three preceding weeks. These hospitals also contained on Saturday last 949 cases of diphtheria, 784 of measles, 246 of whooping-cough, and 37 of enteric fever, but not one of small-pox. The 1331 deaths from all causes in London were 75 fewer than the number registered in the previous week, and were equal to an annual death-rate of 15·4 per 1000. The deaths resulting from diseases of the respiratory system, which had risen from 285 to 300 in the three preceding weeks, further rose to 311 last week, and were 21 in excess of the number in the corresponding week of last year.

Of the 5285 deaths from all causes in the 96 towns last week, 183 resulted from various forms of violence and 402 were the subject of coroners' inquests. The causes of 54, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, Bradford, Nottingham, Portsmouth, Salford, Leicester, and in 64 other smaller towns. The 54 uncertified causes of death last week included 12 in Birmingham, 8 in Liverpool, 4 in London and in Bootle, and 2 each in Warrington, Burnley, Preston, Sheffield, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,400 persons at the middle of this year, 1237 births and 748 deaths were registered during the week ended Saturday, Jan. 11th. The annual rate of mortality in these towns, which had been 19·2, 17·1, and 17·6 per 1000 in the three preceding weeks, declined to 17·3 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these Scotch towns averaged 16·6, or 2·1 per 1000 in excess of the corresponding rate in the 95 large English towns. Among the several towns the death-rates last week ranged from 7·6 in Ayr, 8·8 in Falkirk, and 12·2 in Paisley, to 21·1 in Dundee, 22·3 in Perth, and 22·8 in Greenock.

The 748 deaths from all causes were 15 fewer than the number in the previous week, and included 57 which were referred to the principal epidemic diseases, against 43 and 66 in the two preceding weeks. Of these 57 deaths, 30 resulted from whooping-cough, 10 from diphtheria, 7 from infantile diarrhœal diseases, 7 from scarlet fever, and 3 from measles, but not one from enteric fever or from small-pox. These 57 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·3 per 1000, against 1·5 in the 96 large English towns. The deaths attributed to whooping-cough, which had been 29, 18, and 29 in the three preceding weeks, were 30 last week, and included 15 in Glasgow, 4 in Edinburgh, 4 in Motherwell, 2 in Greenock, and 2 in Perth. The deaths referred to diphtheria, which had been 11, 5, and 13 in the three preceding weeks, fell to 10 last week, and comprised 4 in Glasgow, 3 in Aberdeen, 2 in Hamilton, and 1 in Perth. The fatal cases of diarrhœa and enteritis (among infants under two years of age), which had been 12, 8, and 11 in the three preceding weeks, declined to 7 last week; 3 deaths were registered in Glasgow, 2 in Edinburgh, and 2 in Dundee. The 7 deaths referred to scarlet fever were 2 in excess of the average in the three preceding weeks, and included 3 deaths recorded in Glasgow. Of the 3 fatal cases of measles 2 occurred in Glasgow and 1 in Motherwell.

The deaths referred to diseases of the respiratory system in the 16 Scotch towns, which had steadily declined from 207 to 167 in the four preceding weeks, further fell to 148 last week; 27 deaths were attributed to different forms of violence, against 30 and 23 in the two previous weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,199,180 persons in the middle of this year, 583 births and 484 deaths were registered during the week ending Saturday, Jan. 11th. The annual rate of mortality in the 22 or in the 27 towns, which had been 20·6, 15·4, and 21·9 per 1000 in the three preceding weeks, declined to 21·0 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in the 22 town districts averaged 18·1 per 1000, against corresponding rates of 14·5 and 16·6 per 1000 in the large English and Scotch towns respectively. The annual death-rate recorded in the several towns last week was equal to 22·8 in Dublin (against 15·4 in London and 17·4 in Glasgow), 21·1 in Belfast, 19·7 in Cork, 20·3 in Londonderry, 12·2 in Limerick, and 28·5 in Waterford, while in the remaining 21 smaller towns the mean rate did not exceed 19·0 per 1000.

The 484 deaths from all causes in the 27 Irish towns were 20 fewer than the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against 50 in the previous week. Of these 53 deaths, 22 resulted from measles, 17 from diarrhœal diseases, 5 from diphtheria, 5 from scarlet fever, 2 from whooping-cough, and 2 from enteric fever, but not one from small-pox. These 53 deaths from the epidemic diseases were equal to an annual death-rate of 2·3 per 1000, against 1·3 in the 16 Scotch towns and 1·5 in the 96 large English towns. The deaths attributed to measles, which had been 24, 25, and 20 in the three preceding weeks, were 22 last week, and comprised 20 in Belfast and 2 in Tralee. The deaths referred to diarrhœa and enteritis, which had been

17, 6, and 12 in the three preceding weeks, rose to 17 last week, and included 12 of infants under 2 years of age; 8 deaths were registered in Belfast and 6 in Dublin. Of the 5 fatal cases of diphtheria, which were slightly in excess of recent weekly numbers, 3 occurred in Dublin and 2 in Belfast. The 5 deaths attributed to scarlet fever, of which 2 were recorded in Belfast, were equal to the average in the four preceding weeks. The 2 deaths referred to whooping-cough were registered in Waterford, and the 2 fatal cases of enteric fever in Dublin and Cork respectively.

The deaths referred to diseases of the respiratory system, which had been 96, 85, and 96 in the three preceding weeks, rose to 103 in the week under notice. Of the 484 deaths from all causes, 133, or 27 per cent., occurred in public institutions, and 11 resulted from different forms of violence. The causes of 22, or 4·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week did not exceed 1·0 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified: Fleet-Surgeons: C. L. W. Bunton to the *Ganges*, additional, and for Shotley Training Establishment; R. H. J. Browne to the *King George V.*; H. W. Gordon-Green to Pembroke Dockyard; and W. J. Colbourne to the *Neptune*, and for General staff duties, on recommissioning. Staff-Surgeons: H. B. Hill to be lent to the *Victory*, additional, for Physical Training School for requalifying course; G. D. Walsh to the *Dominion*; C. H. Dawe to the *Vivid*, additional, for disposal, to be lent to the *Indus*, temporarily; P. F. Alderson to the *Gloucester*, on recommissioning; H. J. Chater to the *Dublin*, on commissioning; and W. P. Walker to the *Queen*, additional, for 2nd and 3rd Fleets. Surgeons: W. G. Edwards, R. F. MacMahon, L. C. E. Murphy, H. Stone, S. H. Vickery, M. W. Haydon, H. D. Drennan, D. H. C. Given, P. B. Egan, S. Bradbury, E. M. W. Hearn (lent), G. T. Verry (lent), H. H. Babington (lent), and J. M. Hayes (lent), all to the *President*, additional, for five months' course of instruction at the Naval Medical School, to join Royal Naval College, Greenwich; H. M. Braithwaite to the *Hebe*; A. B. Clark to the *Skipjack*; F. C. Alton to Portland Hospital; R. N. W. W. Biddulph to the *Berwick*; J. P. Shorter to be lent to the *Vernon*, temporarily; J. H. Wright and G. P. Adshead both to the *Pembroke*, additional, for disposal; G. A. S. Hamilton to the *Victory*, additional, for disposal; G. J. Carr to the *Excellent*; F. J. Burke to the *Pembroke* and A. R. Price to the *Vivid*, both for R.N. Barracks, temporarily; S. F. Dudley to the *Pembroke*, additional, for disposal, and to the *Pembroke*, for R.N. Barracks; C. R. M. Baker to the *Victory*, additional, for disposal, and to the *St. George*; H. M. Langdale to the *Victory*, additional, for disposal, and to the *Zealandia*; F. H. Holl to the *Victory*, additional, for disposal, and to the *Ganges*, for Shotley Training Establishment, temporarily; and C. H. L. Petch to the *Victory*, additional, for disposal, and to the *Excellent*, temporarily.

THE DIRECTOR-GENERAL, ARMY MEDICAL SERVICE.

It is announced that the appointment of Director-General, A.M.S., will in future be tenable for four years, as in the case of other staff appointments at army headquarters, instead of for three years as hitherto. Surgeon-General Sir Launcelot Gubbins, K.C.B., whose tenure was due to expire on March 6th next, will therefore continue in his appointment of Director-General, A.M.S., until March 6th, 1914.

ROYAL ARMY MEDICAL CORPS.

Captain Matthias F. Foulds to be Major (dated Jan. 9th, 1913). Lieutenant Charles C. Jones, from the seconded list, is restored to the establishment (dated Jan. 1st, 1913).

Lieutenant-Colonel J. S. Green has arrived home, tour expired, from India. Lieutenant-Colonel J. D. Ferguson, D.S.O., has been transferred from the London District to the Eastern Command and appointed Medical Inspector of Recruits in succession to Lieutenant-Colonel G. Cree, appointed Assistant Director of Medical Services at Bordon. Lieutenant-Colonel E. G. Browne, honorary surgeon to H.E. the Viceroy and Governor-General of the East Indies, has been transferred from Delhi to Peshawar and appointed to command the Military Hospital. Lieutenant-Colonel and Brevet-Colonel C. H. Melville has arrived for a tour of duty with the Eighth (Lucknow) Division of the Southern Army in India. Lieutenant-Colonel J. W. Bullen, commanding the Military Hospital at Agra, has been selected for appointment as Senior Medical Officer on board the transport s.s. *Hardinge*, leaving Bombay for Southampton with tour-expired troops on Feb. 5th. Lieutenant-Colonel R. H. Penton has been selected for appointment to hold charge of the Military Hospital at Ranikhet in succession to Lieutenant-Colonel G. H. Barefoot, whose tenure of the appointment expires in March next. Lieutenant-Colonel M. O. D. Braddell, in charge of the Military Hospital at Cawnpore, has been granted eight months' leave of absence home from India from Feb. 1st.

Major S. O. Hall, on arrival in India for a tour of duty, has been appointed to the Fourth (Quetta) Division of the Southern Army. Major J. S. Bostock has been transferred from Meerut Cantonment to the Military Hospital at Ranikhet for duty. Major E. W. Siberry has taken up duty at Wynberg on transfer from the Military Hospital at Potchefstroom. Major G. B. Riddick, Staff Surgeon to Divisional Headquarters at Maymyo, Upper Burma, has been appointed to the London District for general duty. Major J. Hennessy, anæsthetist to the Military Hospital at Cosham, has embarked for a tour of service in India. Major H. Bray has been granted the local rank of Lieutenant-Colonel while employed as Principal Medical Officer of the Egyptian Army. Major G. B. Crisp, Deputy Assistant Director of Medical Services for Mobilisation in the Fifth (Mhow) Division, has arrived home, tour expired, from India. Major A. D. Jameson has taken up duty at the Military Hospital, Peshawar, as Specialist in Dermatology and Venereal Diseases to the First (Peshawar) Division on transfer from Chakrata. Major H. K. Palmer has been appointed to officiate as Medical Officer to the 18th Infantry, stationed at Aden. Major F. W. Hardy and Major S. F. St. D. Green have arrived in India for a tour of duty from Colchester and Aldershot respectively. Major P. H. Collingwood has been transferred from Tregantle Fort to the Military Hospital at Devonport. Major G. St. C. Thom has taken up duty at the Military Hospital, Rawal Pindi, on transfer from Murree Cantonment. Major G. J. S. Archer, specialist in operative surgery at Maymyo, Upper Burma, has been granted a transfer to the Home Establishment by exchange of places on the roster for foreign service.

Captain A. S. Williams, in charge of the Military and Cantonment Hospitals at Khanspur, Murree Hills, has been ordered to join the Irish Command for duty on Feb. 9th next, and on arrival will be appointed to the Dublin District for duty. Captain A. H. Bond has been transferred from the Military Hospital at Cork to Fermoy. Captain R. F. O'T. Dickinson has taken up duty at the Military Hospital, Delhi, on transfer from Landour Cantonment. Captain F. A. McCammon has been appointed to the Dublin District on return from Colaba, Bombay. Captain M. D. Ahern has embarked for a tour of duty at Bermuda. Captain C. R. M. Morris has arrived home from India, tour expired. Captain W. D. C. Kelly, specialist in operative surgery to the Dublin District, has embarked for a tour of duty in the South African Command. Captain R. H. MacNichol, specialist in dermatology and venereal diseases at the Royal Herbert Hospital, Woolwich, has joined the London District for duty. Captain A. W. Gibson has been transferred from the Military Hospital at Gibraltar to the Sixth (Poona) Division of the Southern Army in India. Captain D. G. Carmichael has taken up duty at the Military Hospital, Edinburgh, on transfer from Ayr. Captain G. F. Rudkin and Captain W. B. Purdon, serving at Madras and Cannanore respectively, have been placed in Medical Charge of tour-expired troops and invalids proceeding from Bombay to Southampton in the transport s.s. *Plassy*. Captain A. Fortescue has been placed under orders for transfer from the Eighth (Lucknow) Division of the Southern Army in India to the Burma Division for a tour of duty. Captain W. F. M. Roughnan has been selected for appointment as Specialist in the Prevention of Disease, and to take charge of the Bacteriological Research Laboratory at Brigade Headquarters, Aden. Captain M. C. Beatty has joined the

Military Hospital at Devonport on completion of duty at Okehampton. Captain A. L. Foster has been granted eight months' general leave of absence home from India.

Lieutenant A. S. Cane has left the London District for a tour of duty in India. Lieutenant F. A. Robinson, attached to the Military Hospital, Curragh Camp, has been placed under orders to embark for India. The following Lieutenants have been ordered to join the Irish Command for duty, and on arrival will be appointed to districts as noted:—Dublin District: Lieutenants H. W. L. Allott and E. C. Lang; Cork District: Lieutenants E. V. Whitby, R. E. Porter, and R. B. Phillips; Belfast District: Lieutenant J. Hare. Lieutenant T. C. R. Archer has left Lydd and embarked for a tour of service in South China. Lieutenant P. C. Field has been transferred from the Military Hospital at Cairo to Alexandria for duty. Lieutenant W. B. Laird and Lieutenant H. J. S. Shields have been appointed for duty in the London District on transfer from the Aldershot Command. Lieutenant A. G. Jones, on arrival in India, has been attached to the Station Hospital at Rawal Pindi for a course of instruction in Indian sanitation.

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of the undermentioned officers of the Indian Medical Service: Lieutenant-Colonel Carrapiet John Sarkies (dated Dec. 6th, 1912). Lieutenant-Colonel Joshua Chaytor-White (dated Dec. 22nd, 1912).

Lieutenant-Colonel and Brevet-Colonel H. F. Cleveland, on return from leave of absence, has taken up duty as Assistant Director of Medical Services to the Aden Brigade. Lieutenant-Colonel C. M. Green has been selected for appointment to the increased rate of pay under Article 7 of the Royal Warrant of March 13th, 1908, in succession to Lieutenant-Colonel W. A. Sykes, retired. The services of Lieutenant-Colonel J. C. White, Sanitary Commissioner to the United Provinces of Agra and Oudh, have been replaced at the disposal of the Government of India Education Department.

Major J. A. Black, Chemical Examiner to the Government of the Punjab, has been granted two months' privilege leave of absence. Major S. P. James has been placed on special duty under the orders of the Director-General of the Indian Medical Service. Major S. R. Godkin has been selected for appointment as Specialist in Advanced Operative Surgery. Major W. J. Niblock has arrived home on leave of absence from India. H.E. the Governor of Bombay in Council has been pleased to appoint Major C. C. Murison to act as Civil Surgeon, Karachi, and Deputy Sanitary Commissioner for the Sind Registration District, in addition to his own duties as Superintendent of Matheran, in succession to Lieutenant-Colonel B. B. Grayfoot, promoted. Major G. E. Stewart has handed over charge of the office of Deputy Sanitary Commissioner of the Central Registration District in Poona to Captain A. P. Hamilton. Major M. P. O'Gorman Lalor, Deputy Sanitary Commissioner in Burma, has been placed on special duty for 18 months in connexion with the investigation of malarial fevers in India. Major H. J. K. Bamfield has been granted five months' extension of his leave of absence home from India.

Captain D. Munro, officiating civil surgeon at Serampore, has been appointed to act as First Resident Surgeon in the Presidency General Hospital, Calcutta, during the absence on leave of Captain H. B. Steen. Captain N. E. H. Scott, residency surgeon at Baghdad, has been appointed to temporarily hold charge of the current duties of the office of Political Resident in Turkish Arabia and to act as His Britannic Majesty's Consul-General at Baghdad, in addition to his own duties. The services of Captain R. D. Willcocks have been placed permanently at the disposal of the Government of Madras. Captain A. Cameron, officiating superintendent of the Central Prison at Benares, has been transferred to the Ballia District and placed on special duty in connexion with the prevention of plague. Captain V. B. Nesfield, officiating civil surgeon at Bijnor, has been granted two months' leave of absence home from India. Captain H. Watts, officiating civil surgeon at Wardha, has been transferred to the Betul District as Civil Surgeon. Captain J. M. A. Macmillan has taken up duty as Civil Surgeon at Hoshangabad. Captain F. N. White has been placed on Special Duty under the orders of the Director-General of the Indian Medical Service. The services of Captain R. A. Needham have been placed temporarily at the disposal of H. E. the Commander-in-Chief in India. Captain E. S. Phipson has been selected for appointment to the Jail Department in the Madras Presidency. Privilege leave for two months and six days has been granted to Captain W. J. Powell, officiating superintendent of the Central Jail at Jubbulpore in the Central Provinces.

Lieutenant M. Galvin, superintendent of the Juvenile Jail at Alipore, Calcutta, has been appointed to officiate as Superintendent of the New Central Jail at Kalighate during the absence of Major J. Mulvany on deputation.

TERRITORIAL FORCE.

Royal Army Medical Corps.

3rd Wessex Field Ambulance, Royal Army Medical Corps: Lieutenant Edmund Alderson to be Captain (dated Dec. 16th, 1912).

1st Lowland Field Ambulance, Royal Army Medical Corps: Arthur Drummond Downes to be Lieutenant (dated Dec. 12th, 1912).

DEATH OF A RED CROSS NURSE.

Miss Barnes, one of the London nurses attached to the Princess Sophie Red Cross Hospital, died on the night of Jan. 11th from typhoid fever, contracted during her work among the sick soldiers.

Correspondence.

"Audi alteram partem."

JUDICIAL HANGING.

To the Editor of THE LANCET.

SIR,—With permission I wish to thank Dr. F. Wood-Jones for his article in your issue of Jan. 4th on "Judicial Hanging," which not only fully explains the lesions produced thereby, but also draws attention to a piece of mediæval barbarity that has survived the days of archery and defensive armour.

Hanging has been always in this country the manifestation of contempt and degradation, and to be "suspended by the neck until you be dead," in order to be jeered and scoffed at by a brutal and savage mob, was nearly the extremity of vengeance. The Nubian method of fracturing the base of the skull by a subaural knot, whilst doubtless very efficacious, would probably bring about a more protracted death than the fracture-dislocation caused by the submental knot. With a sufficient "drop" this latter should be instantaneous; yet in either case each step in the proceedings must be utterly repugnant to the civilised, and consequently sensitive, mind. Hanging betrays a cruelty only to be looked for amongst barbarous races. If I wished to kill my dog I would not hang him.

About 1882, when a student, I was given the mummified head of an alleged "pirate." The hair was black, short, and wiry. The orbits and mouth contained dust, and the cranium the shells only of many maggots. The scalp and face showed sundry wounds—some shearing away portions of bone. On boiling and cleaning the head I found a dislocation between the second and third cervical vertebræ. There was no fracture of the bones, but the transverse processes were displaced, twisted as by screw-like force. And this I judged to have been the cause of death. The neck had been then severed below the fifth cervical. None of the vertebræ was damaged; each was in good anatomical condition.

The wounds on the head may have been inflicted before or after death—when the head was cut off to be impaled. The striking points of the skull were: (1) The undue prolongation posteriorly of the right side of the cranium; (2) the low receding forehead; (3) the thickness and hardness of the cranial bones; (4) the strongly built yet comparatively light and well-shaped lower jaw, bearing a full set of sound, blackened teeth; (5) the well-marked impressions for the attachment of muscles. There being no history given with this relic, each surgeon may attach his own interpretation to the tragedy. My own view was that the captured "pirate" was run up probably to the yard-arm and his neck dislocated by a sudden twist of his body

upon the fixed head, the knot being suboccipital, and that the execution was summarily performed by unskilled hands.

As a man looking through coloured glasses necessarily sees everything of the colour peculiar to his glasses, so everybody seeing things from his own standpoint differs materially in his translation of ideas from others who regard the same things in another light. Science has shown criminality to be the result of misfortune rather than a deliberate sin, both in cause and effect; that the crime is due to a distorted and crippled mind oftener than a mischievous and malicious reason. Let science shed its light, not only on the enormity of the crime, but also on the mental deformity of the criminal; and when an individual has committed an offence that can only be wiped out by life let him be annihilated in the speediest and most painless manner that our own surviving minds may not be vexed by useless and remorseful reconsideration.

I would abolish "hanging" entirely, and I would annihilate those only whose existence had become a public danger, and out of whose lives could be gained no public advantage.

I am, Sir, yours faithfully,

JOHN GOOD, M.R.C.S. Eng.

Blackrod, near Chorley, Jan. 13th, 1913.

To the Editor of THE LANCET.

SIR,—I was much interested in Dr. F. Wood-Jones's paper on the above subject in THE LANCET of Jan. 4th, as he had kindly shown me the specimens in the College of Surgeons Museum not long ago. In 1886 I attended several judicial executions by Home Office authority, on the recommendation of Lord Aberdare's Capital Sentences Committee, appointed by the then Home Secretary, Sir Richard Assheton (now Lord) Cross, before which I gave evidence and explained a chin-trough I had invented, with the object of keeping the knot or "eye" of the rope under the point of the chin, which several experienced medical witnesses considered to be the most deadly position, dislocation or fracture having been found by them whenever the knot chanced to be under the chin.

I was under the impression that this submental knot had been adopted, and the subaural long discarded; so was much surprised on finding the latter still "in full swing." I had felt instinctively that by delivering (by means of my trough) the upward and backward blow caused by the sudden check to the fall of the body on the point of the chin, the hinged head would be so rapidly and violently thrown back, at the exact second that the posterior segment of the noose struck forward the top of the neck, that the hinge must give way and dislocation take place, probably between the atlas and axis with (as I thought) fracture of the odontoid process of the latter, rupture of the cord, and instantaneous death. I also thought that this action would place the joint in one of those abnormal positions considered necessary for almost any dislocation in the body. I trusted to leverage on the chin to jerk the head back, but it was advanced against me that a man can voluntarily put his head back to within 10° of the angle the trough could force it, utterly ignoring the difference between a sudden terrific blow and a cautious movement of our own sweet will. I also coupled with my *arte non vi* treatment the certain possibility of reducing all drops to three or four feet.

The opposition to my chin leverage was most pronounced on the part of Dr. James Barr, medical officer to the county prison of Lancashire at Kirkdale—now Sir James Barr, the distinguished President of the British Medical Association. His belief was in the "energy of the fall as the chief factor" in successful executions, and he looked upon the position of the knot as "of secondary importance," but then he did not think it "a very material point whether the scaffold should be level with the ground or should have steps"—for the wretched culprit to climb.

Of my own humble effort the chairman, Lord Aberdare, was good enough to say: "As far as your object goes it quite falls in with what we wished—namely, to keep the knot under the chin;" and, later on, dealing with the risk of decapitation, "that arises from the fact that the rope is not properly adjusted under the chin; but if you could be sure of the knot remaining here and so jerking the head back you would then be sure of producing fracture," to which Dr. Samuel Haughton added, "we can produce fractures now by moderate drops, by securing the head being thrown back; this [my trough] is a step in the right direction." However, the committee recommended a scale of drops according to weight, chiefly, I believe, on Dr. Barr's suggestions, calculated to deliver a blow on the neck in all cases of about 1260 foot pounds. This means, for a culprit weighing 10 stone, or 140 pounds, a drop of 9 feet ($140 \times 9 = 1260$, or $\frac{1260}{140} = 9$), but I believe, from figures given in newspaper accounts of executions for some time after, that not more than about three-fourths of these lengths were actually given.

I was recommended by Dr. Haughton to experimentalise on the cadaver, but found it impossible to get one until recently, when I obtained the most satisfactory results—viz., a definite fracture of the neck in a human body weighing 73 pounds with a drop of 4 feet, producing a blow of 292 foot pounds, the drop for which by the committee's scale would be over 12 feet.

May I here appeal to the authorities of the London medical schools to place at my disposal some of their subjects so that I may thoroughly test my system, which I can do without in any way interfering with the usefulness of the bodies for future dissection by their students? Such experiments must soon prove the correctness of Dr. Wood-Jones's concluding sentence "that these series of lesions" (doubtless repeated by the chin-trough) "will show clearly what many have advocated for years, that the submental knot should now supersede the subaural knot in our English hangings."

I am, Sir, yours faithfully,

JOHN J. DE ZOUCHE MARSHALL, L.R.C.S.I., &c.,
Lieutenant-Colonel, R.A.M.C. (T.), retired.

Thames Ditton, S.W., Jan. 13th, 1913.

IMPACTED FOREIGN BODIES

To the Editor of THE LANCET.

SIR,—In the instructive article by Sir StClair Thomson in THE LANCET of Jan. 4th, p. 16, an impaction of four years' duration is quoted as a rarity, and I therefore desire to record the following case. Two years ago I was asked to see a child of 10 who had an acute attack of dyspnœa and was much cyanosed. Her condition was typical of laryngeal obstruction, but nothing could be seen to account for it, and the mother, on being closely questioned, was positive that no foreign body had been swallowed. The attack passed off suddenly, and was repeated twice in the course of a few weeks. On each occasion the same inquiries were made, and the third time the mother recollected that when $4\frac{1}{2}$ years old the child had swallowed a halfpenny. She was taken to a large provincial hospital and examined with X rays, with a negative result. It was stated that the child had just previously crossed the Bristol Channel and been very sick, and the coin was supposed to have gone overboard. On this history I had the patient brought into the hospital, and a skiagram showed a coin lodged opposite the bifurcation of the trachea. This was removed with a coin-catcher under an anæsthetic. A stricture subsequently developed, which yielded to dilatation, a bougie being passed weekly for a year. The dates were carefully verified, and prove that the coin was in the œsophagus just over five years.

I am, Sir, yours faithfully,

PENROSE WILLIAMS, F.R.C.S. Edin.

Bridgwater, Jan. 6th, 1913.

THE INFLUENCE OF LACTATION.

To the Editor of THE LANCET.

SIR,—In the majority of cases when the mother does not suckle her child menstruation reasserts itself about the fourth or sixth week after parturition—a fact which justifies us in assuming that the uterus then has practically regained its pristine state, and that the evolutionary changes which took nine months to build up are dissipated in from four to six weeks. The accumulated anabolic materials which are accountable for that enormous increase in the bulk and weight of the pregnant uterus are absorbed speedily and without influencing or affecting in any apparent manner the constitutional state of the woman. If, however, the child be suckled, then not only is menstruation liable to be held in abeyance for a greater or less length of time whilst lactation is in progress, but the ability to conceive is then also greatly lessened.

Regarding the length of time that a mother should breast-feed her child, we possess as yet no trustworthy physiological data by which we can settle definitely this thorny question; but in barbarian and civilised countries alike, because it is well known that lactation tends to inhibit the fertile state of the woman, it not infrequently happens that the child is undoubtedly suckled far too long, as it sometimes is not weaned until it is two or even three years old. As, however, menstruation is apt to be inhibited during lactation we naturally desire to have an explanation of the mechanism of this phenomenon. On experimental evidence alone there is an overweening disposition to believe that ovulation and menstruation are not copartners, but that menstruation depends upon and is caused by an internal secretion formed in the ovary. Brushing aside and ignoring altogether clinical facts, experimentalists would have us learn that the ovary exercises a direct influence upon the uterine mucosa both in the unimpregnated and the pregnant state. If, however, the findings and conclusions of those authorities be unimpeached, there are then many clinical facts which will remain inexplicable. We shall, for example, experience the greatest difficulty in understanding how a placenta under such circumstances could possibly complete its development and growth and attain perfection in any structure outside the uterus, and yet it is common knowledge that the placenta in every case of full-time extra-uterine pregnancy is as perfect structurally and functionally as any placenta formed in the cavity of the uterus. There is, as I have on several occasions shown, abundant clinical proof that the menstrual discharge is itself a product of secretion, but let us for the nonce assume that it is the consequence of a more or less extensive destruction of the uterine mucosa and outpouring of blood from ruptured capillaries caused by a "hormone" issuing from the ovary. On the latter hypothesis, when menstruation is held in abeyance because of lactation, we must infer that "the specific hormone" which dominates menstruation is on account of the activity of the secretory cells of the mammary glands either suppressed or rendered powerless to exert its wonted influence upon the endometrium. But milk is merely a complete food, containing as it does all the elements essential for the maintenance of the well-being of every organ and tissue of the body, and it possesses no other known virtue. When, therefore, the mammary glands draw upon the maternal blood for the materials necessary for the sustenance of the infant, the assimilatory powers of the gastro-intestinal tract of the mother should be so heightened that the nutritive state of no one organ or tissue of her body should be more likely to suffer than another. It is consequently difficult for us to believe that the "hormone" of menstruation is suppressed or rendered functionally useless during lactation, because the cells of the mammary glands abstract from the maternal blood the constituents of milk. On the other hand, on the hypothesis that menstruation is a secretory phenomenon, the suppression of menstruation by lactation resolves itself merely into the question of the inhibition of the functional activity of one organ by the functional activity of another set of correlated organs through the influence of the blood-vessels.

Concerning the question of the direct influence of lactation upon ovulation and gestation, I find that during the progress of lactation impregnation under such circumstances occurs in 22 per cent. of the cases; in 7·5 per cent. the fertilisation takes place in spite of the fact that menstruation is held in abeyance, whilst in 14·5 per cent. it occurs sooner or later after menstruation has been re-established. Occasionally I have seen young married women who had never menstruated during the first five or six years of their married life because menstruation was held in abeyance by lactation, and fertilisation occurred during lactation. To some misinterpreted fact of the aforesaid type we are probably indebted for the statement which is still reiterated "that women who have never in their lives menstruated have nevertheless been pregnant." Judging, however, from the numerous cases which have come under my observation of women who had lived in wedlock many years before attaining the climacteric age and who had never menstruated, I am confident that no woman has ever been pregnant whose uterus had never displayed and would never exhibit the external manifestation of menstruation. When conception occurs whilst menstruation is held in abeyance by lactation it is of course quite possible that the ovum which is then fertilised is that maturing for an approaching menstrual period, and I have already expressed the opinion that most probably the ovum which is fertilised under ordinary circumstances is that of an approaching, and not that of a past, menstruation, because the ovum of a past menstruation is too old to respond to the attractive influences of any spermatozoon. In any case it is very evident that ovulation may occur independently of menstruation and in consequence of sexual excitation, and it is highly probable that the fertile powers of the woman are diminished whilst lactation is in progress, because the ability of the uterus to respond adequately to the irritative influences of a vital oosperm is repressed by the maintenance of a state of activity in the mammary glands.

When impregnation occurs during lactation, and whilst menstruation is held in abeyance, it not infrequently happens that the woman, being unaware of the fact that she has conceived, continues to suckle until she is three or more months pregnant. Clinically we have no proof that lactation affects in any prejudicial manner the process of gestation. In many cases, however, the evolutionary changes going on in the pregnant uterus call a halt in the activity of the mammary glands, and as the child can no longer be satisfied with its breast feeds the mother is compelled to wean it.

I am, Sir, yours faithfully,

JAMES OLIVER, M.D., F.R.S.Edin., F.L.S.,
Gynæcologist to the Hospital for Women, London.

Jan. 11th, 1913.

LEUKANÆMIA.

To the Editor of THE LANCET.

SIR,—The report of Dr. C. H. Treadgold of a case of myeloid leukæmia, with so-called megaloblastic degeneration, in a child (THE LANCET, Jan. 11th, p. 94), is of special interest as the blood picture of leukanæmia became that of leukæmia before death. It differs thus from the cases I have published,[1] referred to by Dr. Treadgold, and from others I have seen since that date (1908). In Dr. Treadgold's case the blood picture on May 21st was that of pernicious anæmia, and post mortem well-marked evidence of hæmolysis was obtained. The close resemblance to, if not association with, Addison's anæmia is thus obvious, although clinically it is well known that the latter disease does not become a leukæmia, except as regards a relative change in the leucocytes in certain cases. The most striking feature to my mind of these leukanæmic cases is that they suggest a pathological basis common to leukæmia, leukanæmia (or atypical leukæmia), and pernicious anæmia. The agency which produced hæmolysis and anæmia (832,500 to a cubic millimetre) of a primary and pernicious type (normoblasts 183,700 to a cubic millimetre) may apparently end in producing myeloblastic (60,375 to a cubic millimetre) and myelocytic (7875 to a cubic millimetre) changes in the blood (? of a "regenerative" nature). The anæmia of the leukæmias, including atypical, shows the close original association between the red and white cell "series" and the difficulty in maintaining the barrier between the three diseases. Hence Leube's term of leukanæmia in such cases as Dr. Treadgold records.

I am, Sir, yours faithfully,

F. G. BUSHNELL,
Tuberculosis Officer, Essex County Council.

Jan. 10th, 1913.

FUNCTIONAL DISORDER OF THE HEART IN THE YOUNG.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 4th you reported some remarks I made at the discussion on heart disease in children at the Royal Society of Medicine. The subject discussed was so extensive, and the time at the disposal of the meeting so short, that many important points could not be dealt with by every speaker. With your permission I should like to write a few lines on a matter with which, for the reasons stated, I was unable to deal at the time, because it is important in itself, and evoking some interest at present. I mean so-called functional disorder of the heart in childhood and adolescence, and the attitude which the physician should take towards it.

It was, perhaps, scarcely germane to the subject under

[1] Liverpool Medico-Chirurgical Journal, 1908, vol. xxviii., p. 415.

discussion, as Dr. Edmund Cautley pointed out in his reply, that adolescents should be taken into consideration at all, but such an extension was not unnatural and was of practical interest. As Dr. Cautley also remarked, functional disorder in children, other than one form or another of innocuous arrhythmia, is decidedly uncommon, and even arrhythmia is not so often met with as it is later. This rarity is probably due to the higher rate of pulsation in childhood. Even in the fœtus, it is true, the heart-rate may be slowed by nervous influence during labour, but who has ever noted cardiac arrhythmia in the quickly beating heart of the baby when the organ has been sound?

When we come to the functional cardiac disorder of adolescents the matter is different. In them the area of cardiac dulness may be enlarged, the apex beat displaced outwards to the left, an auriculo-ventricular systolic bruit present, and inability to exert themselves with their wonted vigour manifest. In these cases it is questionable whether such bruits are often mitral, for even functional leakage here is not a sign which can be ignored with safety. In the adult the sudden establishment of a "functional" mitral bruit may be the harbinger of speedy death. The bruit in functional disorder is most frequently tricuspid and of a quasi-physiological character. The prognosis is good in these cases with reasonable care. Dr. James Mackenzie said he had not heard of their dying. It is not easy to say what the ultimate fate of all these cases may be, and, as Dr. Cautley remarked, some are so persistent as to suggest a more serious affection of the myocardium. But the absence of a record of mortality is no justification for the assumption of such an optimism as deprecates a rational care of the case while the abnormal phenomena continue. It is known that the "strained heart" of the youth with the signs of cardiac insufficiency mentioned, may occasionally be observed to continue for years and to render strenuous exertion impossible without an aggravation of the cardiac state; while it would certainly be fatal to the adoption by such a youth of a profession calling for severe and sustained effort, such as the army. It should, moreover, be reckoned with in life insurance, for such a heart is not an ideal one for encountering the stress of severe illness. The importance of some transient auscultatory signs may have been exaggerated in the past, and the meaning of cardiac irregularity be better understood now, although a good many current notions on the subject may require revision, and possibly in the not very distant future, but the necessity for reasonable care in the treatment of functional disorder in the young, as indicated by the signs referred to, remains. These cases are not very common, and their rarity argues their abnormality. Dr. Walter Carr appeared to suggest that such functional disorder was probably more common in the rich than among the poor. It is probably more often detected in the former class than in social strata in which the survival of the fittest is, from the intensity of the struggle for bread, still the first and only law. But when one recalls the innumerable cases one has examined in hospital and private practice over a term of years, it cannot be denied that functional disorder, other than mere arrhythmical action, is not common, and must, therefore, be regarded as abnormal. As such it demands care until, if possible, normal action be restored. If the signs persist, whatever the graphological record, the case cannot be regarded as one of "functional" disorder, but of heart disease, and demands recognition as such.

I am, Sir, yours faithfully,

ALEXANDER MORISON.

Upper Berkeley-street, W., Jan. 10th, 1913.

THE WATER-SUPPLY OF TUTICORIN (SOUTH INDIA).

To the Editor of THE LANCET.

SIR,—May I be allowed to bring the following facts to your notice? They are based on letters and information received from relatives in Tuticorin, which information I am ready at any time to lay before you. There are roughly 36,000 natives living there and no drinking water. I think that tells you about enough, but I will expand the story somewhat.

The Madura Company, which runs the mail steamers to and from Colombo, brings every morning Colombo water for all of the Europeans free, but they have to employ coolies to carry the tins. There is no possibility of bringing water for thousands of natives in the same way. Two years ago the rains failed there and there was a water famine. The distress was awful; the people used to go down to the jetty in crowds to buy just one tumbler of water. I hope you will use any influence you may have to prevent such horrors.

The water they have there at present is brought from a large tank some four or five miles away, in which those natives who live near wash their clothes and bathe. From this reservoir the water runs into open wells, exposed to all the dust, and if there is any rain (and rain in the tropics is heavy when it comes) a flood rushes down the roads and gutters, such as they are, carrying with it all the filth of the streets into these wells. That is all the poor natives have to drink. Enteric fever is very bad there, even amongst the natives. The Chamber of Commerce has made more than one representation to the Government and wrote again lately about the need of a good water-supply. After many weeks of waiting they got an answer from the local Government man to say that a scheme was under consideration. (It has been under consideration for at least six years, but nothing happens.) The Government, it was said, is discussing the financial part of it, and the Chamber of Commerce was asked if it wished its letter sent up to the Head Office. Of course, the representation should have been sent to the Head Office weeks ago. What is the use of anyone sending a letter to the Tuticorin office? And all the other letters on the subject have gone, I suppose, into the same pigeonholes. Naturally nothing gets done if the Head Office is never told about the situation.

But surely, Sir, visitors from the Head Office should go down occasionally and see the state of things themselves. They are improving the water-supply in Madras and one or two other places where the Government people are, but they do not even bring any supply to Tuticorin fit to drink. There, where there are huge cotton mills in which thousands of natives are employed to work, in the port of Southern India where all the coolies for Ceylon have to pass, and through which there goes in the year £6,000,000 of products, there is no drinking water.—I am, Sir, yours faithfully,

Jan. 10th, 1913. F.R.C.S.

THE EXAMINATION FOR THE DEGREE OF M.S. LONDON.

To the Editor of THE LANCET.

SIR,—Ex-Examiner's letter to THE LANCET of Jan. 4th with reference to the M.S. Lond. degree is interesting in these days when statements are so freely made as to the standard of London degrees compared with the diplomas of the Colleges and even of the Apothecaries' Hall. Presumably one may take it that a candidate for the M.S. who already has the F.R.C.S. Eng. considers the former the harder examination, and also worth obtaining. If that were not the case it would be as reasonable to expect Fellows of the College sitting for the examination of Licentiate of the Apothecaries' Hall. Certainly one would not expect them to expose themselves to the risk of losing money in paying the exorbitant examination fees of the London University. Under these circumstances, if the University prefers to maintain a high standard not only for the M.S. but also for the M.D. degree, such a policy should be amply justified. Neither in social prestige nor in the glamour of ancient foundations can London compare with Oxford or Cambridge, and it is certainly to be hoped that its chief attraction will not be that anyone and everyone who so desires can get a degree for the mere payment of a sum of money. In these days of multitudinous universities scattered all over the country there should be no hint of attracting students—as I am afraid there is—to this or that centre by a lowering of standards. The maintenance of a high standard will always pay in the long run.

With apologies for encroaching on your valuable space,

I am, Sir, yours faithfully,

Jan. 8th, 1913. A LONDON GRADUATE.

To the Editor of THE LANCET.

SIR,—Permit me to assure your correspondents and the examiners that I intended my criticism to apply to the standard of the examination, not to the examiners. A standard is handed on and tends gradually to rise, and it

seems to me has reached at the moment in this examination an unwise level and requires to be reviewed.

I am, Sir, yours faithfully,

Jan. 13th, 1913. A FORMER EXAMINER.

*** M.S. Lond., F.R.C.S. Eng., asks us to point out that in his letter on this subject last week the word "ideal" was omitted before "assessors" in the closing sentence of the third paragraph.—ED. L.

PATHOLOGICAL ENTOMOLOGY IN FIJI.

To the Editor of THE LANCET.

SIR,—Some few corrections, but important to the Medical Department of Fiji, should be made in the annotation in THE LANCET of Oct. 5th, p. 961, with the above title.

It is stated that 15 inspectors are employed "in Fiji." This should be "in Hawai," for in Fiji there are, as yet, no mosquito brigades; the funds of the colony do not permit of their appointment, though it is hoped that they may be appointed in the near future. Similarly, the top minnow is used in Hawai, though an experimental importation has been made by Mr. Jepson.

In regard to disposal of excreta much care is exercised by the medical officers in close supervision of this matter in native villages, and allowances must be made for the lack of coöperation due to ignorance on the part of the natives. The disposal of sewage in the two towns of the colony is by the pail system, and this is about to be replaced in Suva by a general system of water-carried sewage throughout the town. Within the last three years there has been a Government bacteriologist appointed who is also the medical officer of health of the town of Suva. The appointment is a permanent one, and will bear good fruit in time.

It is a mistake to think that the sanitary conditions of the colony are neglected; much has been done by the Government and more will be done, but it must be realised by those unacquainted with the difficulties of medical work in a colony like Fiji that in dealing with ignorant and apathetic natives there is a continuous effort, and that to make any reasonable impression time and gradual education of the native mind to European ideas are most necessary. Twenty-five years ago there were five Government medical officers in the colony; to-day there are 22 scattered over the whole group of islands. Surely a sign that there is not neglect of the public health.—I am, Sir, yours faithfully,

Nov. 28th, 1912. A RESIDENT.

*** We are glad to publish this letter. In our note, which was a review of Mr. Frank Jepson's report, it is nowhere stated that the sanitation of the colony is neglected. Fiji is a young colony, and we have reason to know that the best is being done in conditions that as yet are not easy.—ED. L.

DRUNKENNESS AND THE EFFECT OF ALCOHOL.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Dutton I would quote the following paragraph from another source ("The Alliance Year Book," 1912, p. 23): "After 40 years' experience at the Bar and ten years as a judge, I know as a fact that 90 per cent. of the crime of this country depends upon intemperance."—Lord Alverstone, Lord Chief Justice, 1908.

With regard to Dr. Dutton's reference to the Proverbs xxxi. 6, "Give strong drink unto him that is ready to perish, and wine unto the bitter in soul" (Revised Version), anybody who quotes from the Bible for support should remember to look up and quote other texts on the same subject if it is really desired to establish an unbiased opinion. For instance, only just a few pages before the above quotation will be found Proverbs xx. 1, as follows: "Wine is a mocker, strong drink is raging; and whosoever is deceived thereby is not wise." Or, as in the Revised Version: "Wine is a mocker, strong drink a brawler; And whosoever erreth [or reeleth (margin)] thereby is not wise." It is this verse which deals more closely with the topic now under discussion, for if any man takes enough to cause him to reel the Bible states he is not wise; and this is admitted by all serious-minded people. And again, while approving of giving wine where necessary, not many people would admit that it was because they were ready to perish or were bitter in soul that they took drink. With regard to some of the people who have described themselves as "teetotalers," it must be remembered that to them the word "teetotal" means "not a drinker of beer," while "port wine" and "gin" teetotalers are not a few.

I am, Sir, yours faithfully,

Jan. 13th, 1913. A. B. C.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—In his letter last week Dr. H. B. Luard breaks out at length into lamentation over what he describes as the "debacle" of the profession. The debacle consists "in the establishment of contract capitation practice on a universal basis." In my belief, this establishment of medical practice—not universally, but upon the employed classes—on a basis of payment *per capita* will prove not to be a debacle, but a restoration, a resurrection. The utter defeat of the Association seems to me due solely to its failure to recognise that medical practice upon the employed classes at adequate fees is a failure, and that the real choice presented to us was the adoption of small cash practice or a whole-hearted acceptance of the *per capita* system. By adequate I mean a fee not less than 2*s.* 6*d.* for every visit or consultation or supply of medicine. The books of every general practitioner in the land will show whether I am right in saying that practice at the 2*s.* 6*d.* fee is a dismal failure. In an advertisement of the sale of a practice recently book debts to the amount of £1000 were actually thrown into the purchase price of £300 or £400.

The working man of this country has clearly demonstrated that he cannot pay half a crown—it is far too much for him in proportion to his wages. When he does, however, pay it, he does so by depriving himself or his family of the necessities of food or clothing. But he can provide a small sum weekly to a general fund as his share of the cost of giving medical service to all working men. The ordinary medical bill of the individual practitioner can be paid from this fund, but the profession now realises, it would seem, that the total income to be derived by this method of payment will not reach the amount to be obtained by accepting an adequate premium per head of all the contributors. Dr. Luard and others who think with him have now the opportunity of putting their tenets into practice by electing to choose to be paid for their services as they are rendered. The Act gives them the enormous advantage over old-time practice in that their bills will be paid; and yet I venture to prophesy that within a year or two they will themselves tumble to the fact that the Government grant *per capita* is very much better remuneration than half-crown practice cases with Government security for payment. If he should, however, persist in his faith in "the only method of payment that consorts with the dignity of a noble profession," he will inevitably find his income declining, because the public health is improving. *Per capita* practice is to all intents and purposes a salaried appointment, from which it differs in that income varies with the number of persons over whom the doctor takes charge. If the workman cannot pay adequate fees for his own doctoring, neither can he for the medical care of his children, so that an extension of insurance to women and children should be welcomed by the medical profession.

It is almost completely true to say that no family man with an income below £300 or £400 a year is economically able to pay for proper medical attention, and it would, in my opinion, be much better both for this grade of people and for doctors if the capitation method could be extended to cover them. They pay bills badly—that is, a large percentage of our bookings are bad debts; but by sharing together the risks (which is the meaning of the capitation method) they would not only provide adequate remuneration to the doctor, but obtain better service than they now do. It is this class that puts off the early call because it fears the bill.

The operation of the Act must enhance the position of the doctor in the community in so far as it removes almost entirely the commercial element that formerly obtruded

itself between doctor and poor patient. If a person needs the doctor he ought not to be deterred by the "expense" of the interview. The fee is a deterrent of early calls and a preventive of sufficient calls, and is thus harmful to the community. I am, Sir, yours faithfully,

B. HALL, M.B. Lond.

West Mersea, Colchester, Jan. 12th, 1913.

To the Editor of THE LANCET.

SIR,—While I was speaking at the Queen's Hall meeting last week the name of a gentleman was mentioned. As a matter of fact, my allusion was to others, and the gentleman in question (who is a personal friend of mine) informs me that he has never taken such action as that which I was discussing at the time.

I am, Sir, yours faithfully,

London, Jan. 14th, 1913. E. B. TURNER.

To the Editor of THE LANCET.

SIR,—Having carefully read your leading article on the National Insurance Act in to-day's LANCET, I cannot help feeling that you fail to realise the "terribleness" of what has happened. Thousands of doctors have deliberately broken their solemn pledges without any valid reason, and yet they are not even to be admonished. This sort of thing will not cause peace. I am Representative of the South Suffolk Division, and I received the most definite instructions to vote against accepting service under the present conditions and regulations. I was not allowed any discretion in the matter. This resolution was passed by a large majority, and in order to avoid any possibility of subsequent defection a resolution was unanimously passed whereby the minority agreed to abide loyally by the decision of the majority. Imagine my astonishment and disgust when immediately after the Representative Meeting the same Division decided to go on the panels. How can these men be trusted again? And this is what has been happening all over England.

It is no good blaming the Chancellor of the Exchequer. It is our own fault entirely. Victory was practically within our grasp, but we have deliberately thrown it away. How can the governing body of the British Medical Association re-establish its authority when its decisions are openly flouted? If released from my pledge I intend putting my name on the panel at once. If not released I shall obey orders, and, if ruined, I shall blame not the present executive of the British Medical Association, but my dishonourable *confrères*, and men like Dr. Lauriston Shaw and Dr. Buist, who have done all they can to induce men to break their pledges. I quite thought some one would have replied to Dr. E. R. Fothergill's letter of last week, where he speaks of the "bastard policy" of the British Medical Association. This is quite untrue. The principle of the recognition of lay bodies was approved of at the Representative Meeting in November and had previously been considered by the Divisions. It therefore became part of the policy of the Association.—I am, Sir, yours faithfully,

T. CUMING ASKIN,
Representative South Suffolk Division.

Alderton, Woodbridge, Suffolk, Jan. 11th, 1913.

PS.—The great and initial blunder on the part of the Association was having anything to do with payment by capitation. Had we from the first decided once and for all to get rid of the cursed capitation system all would have been well. In the light of what has happened I quite think a sufficient number of men would have been found willing to work the Act on the original terms of 6*s.*, including medicine. If next year we are compelled to look after the dependents for 2*s.* 6*d.* a year we cannot be surprised. The public now knows that it has been all "bluff, bluff, bluff"! Even my poorest patients are disgusted with the behaviour of so-called gentlemen.

To the Editor of THE LANCET.

SIR,—The medical profession has always been called honourable, charitable, and unselfish—a very good character. Their reward, when not paid for work done, was often a certain amount of satisfaction in that they had acted up to this estimate. Then comes a test—the National Insurance scheme. We agree not to take service unless the six demands of the British Medical Association are assented to. The author of the scheme talks to deputations, but declines to give way on important points. Then a large proportion of the medical men rush to put their names on the panel, and so the honourable profession stultifies itself. Why sign a declaration if you do not mean to keep it? I know that many cannot live without the help of clubs, but they should not have signed the "six articles." We stood shoulder to shoulder till the enemy appeared, and then many ran away. Is this the end of our honourable profession?

I am, Sir, yours faithfully,

C. T. WINCKWORTH, M.R.C.S. Eng., &c.

Brighton, Jan. 13th, 1913. (Not on the Panel.)

To the Editor of THE LANCET.

SIR,—Some of the papers are full of the defeat of the British Medical Association, but we have made a splendid fight and must concentrate to renew it. Looking back, I consider one great flaw has been (leaving out of count the ethics of the matter) the non-division of the rural from the town practitioners. The densely peopled areas are not concerned with mileage; but it is a vital matter in the country, and on this matter we rural men must press our claims, not only from the point of view of fees, but also to check needless distant visits. The Committees should pay the mileage charge and exact it afterwards from the offender. This course would turn inspectors on the trail of lazy patients. In no other way can we stop being summoned for frivolous reasons. It is essential to the Act that frivolous calls should be considered one part of malingering and punished.

Some arrangement must be made with Insurance doctors to keep to a certain number of patients and to certain areas. This will be done much easier if we restrict the term "blacklegs" to those who grab everything. A great flaw in the Act, not pointed out but by myself, is that if an Insurance doctor displeases a Committee he is banned for such work all over Great Britain. We must support our man if he has been badly treated. We must report acts of tyranny on the part of Committees.

I am, Sir, yours faithfully,

L. L. THAIN, M.R.C.S. Eng.

Ewyas Harold, Hereford, Jan. 10th, 1913.

*** We have considered it unnecessary to print the letters which have reached us and which have already appeared in the public press, sometimes in many papers. Such communications may fairly be regarded as already known to our readers.—ED. L.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Local Practitioners upon the Panel.

A BITTER feeling prevails in Liverpool among a large number of the 164 practitioners who at the last moment had no option but to place their names upon the panel. In the face of advertisements inserted in the local press at the instance of the Local Insurance Committee, inviting members of the profession to apply for whole-time appointments at tempting salaries, it was felt that, to avoid ruin in many cases, no other course was open to them. At a meeting of the Liverpool Insurance Committee, held on Jan. 10th, Colonel Kyffin Taylor, the chairman, made an attempt to justify this harsh action on the part of the committee. The committee evidently were not unanimous in the matter of the advertisements, as evidenced by the sympathetic speech of one of its members, who remarked "that, notwithstanding the chairman's statement, he was dissatisfied. ..... He felt strongly that the publication of the advertisements offering whole-time appointments was a great mistake. ..... It was part of a scheme to coerce the doctors and create a panic among them. ..... Those people who authorised the advertisements, and so made it appear that the committee was a party to the scheme, had exceeded their authority. ..... If the Commissioners wanted to give instructions they should give them to their own officials. ..... If the advertisement had been published in the names of the Commissioners the committee would not have been committed to a line of action with which he for one was ashamed to be associated. ..... If the committee had taken up a strong action and refused to

follow the dictation of the Commissioners they would have been able to arrive at an arrangement with the doctors which would have been acceptable to them, as well as to the insured persons and to the Commissioners themselves." It is to be hoped that the Liverpool Insurance Committee contains other members of the independence of Mr. Snodgrass, whose words I quote to you as particularly significant.

William Mitchell Banks Memorial Lecture.

A large gathering of the profession attended at the surgery theatre of the Liverpool University on Jan. 10th to hear the address of Professor F. M. Caird on "Rectal Carcinoma." Professor Caird was entertained at dinner in the evening by the members of the Faculty of Medicine. The chair was occupied by Professor John Hill Abram.

The National Insurance Act and Hospital Sunday.

On Sunday, Jan. 12th, collections took place in the various churches and chapels in the city on behalf of the Liverpool medical charities. Ernest appeals were made to the public not to allow their benevolence to show any falling off this year. One of the misunderstandings surrounding the Insurance Act is the assumption that, as soon as the medical benefits come into operation, the hospitals will be relieved of a large volume of work which they are now voluntarily performing. Probably this will be the case as far as the out-patients' departments are concerned, but it is too soon to prophesy how the Act will affect ward treatment. There is no reason to anticipate that the surgical wards will be relieved of any part of their present work, as the cases hitherto admitted have required the highest surgical skill. Unfortunately, the weather on Sunday last was most unpropitious, due to the recent snowfall. Owing to the poor congregations the returns to date show a considerable decline on last year's collections.

Death of Dr. James Herbert Finegan.

Dr. James Herbert Finegan died rather suddenly, after a short illness, on Jan. 11th, at the age of 75 years. He received his medical education at the old Royal Infirmary School of Medicine, and became a Member of the Royal College of Surgeons of England in 1858. He was also L.S.A. (1859) and Doctor of Medicine of the University of St. Andrews (1862). He was formerly surgeon to the Ladies' Charity and Lying-in Hospital, and upon his retirement was appointed consulting surgeon. At one time he had an extensive midwifery practice, to which branch of the profession he mostly devoted himself. He was a man of genial and kindly disposition, and was held in the highest respect by his professional brethren. He was an ardent Volunteer, and for many years was connected with the old 64th (Lancashire Rifle Volunteers), of which he became surgeon-lieutenant-colonel, and was awarded the Volunteer Decoration. He was well known as a good all-round sportsman. He won the Bronze Medal of the National Rifle Association, and was the winner of the challenge cup for marksmanship in his own corps. He was a noted swimmer, an accomplishment inherited by his two daughters, who have carried off many swimming prizes. The funeral took place on Jan. 14th, and was largely attended by members of his own profession and by the general public. He leaves a widow, two sons, and two daughters.

Appointment for Mr. W. A. Gunn.

Mr. W. A. Gunn, chief laboratory assistant to Professor W. A. Herdman in the department of zoology, will shortly leave Liverpool on his appointment to the curatorship of the museum and art gallery of Newport, Monmouthshire. At a meeting of the Biological Society on Jan. 10th a resolution of congratulation to Mr. Gunn on his new appointment and thanks for his past services to the society was passed with acclamation on the motion of Professor Herdman, and seconded by Mr. Clubb, who welcomed Mr. Gunn into the ranks of museum curators. Mr. Gunn's departure from Liverpool is much regretted by the University students in their loss of a highly successful biology "coach."

Jan. 14th.

HOSPITAL SATURDAY FUND.—The accounts of the Hospital Saturday Fund for 1912 closed on Jan. 13th, when the general collections amounted to £34,740, as compared with £37,012 in 1911, a decrease of £2272.

BRISTOL AND WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

Bristol Hospitals and the Treatment of Insured Persons.

So far the only untoward and visible sign of activity on the part of the Bristol hospitals in regard to insured persons, and the possible misuse of funds subscribed for charitable purposes, is a paragraph in the local papers to the effect that the committee of the Royal Infirmary does not contemplate any change in its methods of admitting patients until it is seen whether any change is necessary.

Bristol Dispensary.

The report presented at the annual meeting of this institution showed a decrease in the number of patients in 1912 as against 1911, the falling off in general cases being 1079 and in midwifery patients 99. The expenditure was £3789 16*s.*, or £1251 10*s.* in excess of the receipts, and the adverse balance was drawn from the capital account. It was stated that the whole staff of the dispensary, with one exception, had gone on the Bristol insurance panel. It was further pointed out that since the work of the dispensary lay chiefly among the women and children, who are for the most part left outside the scope of medical benefits under the Act, it was urgently necessary that funds should still be forthcoming for the maintenance of the institution. It was considered improbable that many insured persons would make use of the institution, but apparently no steps are contemplated to check the use of the charity by State-provided patients.

Presentation to Dr. R. Shingleton Smith.

On Saturday, Jan. 18th, a dinner will be held at Fortt's Restaurant, to be followed by a presentation to Dr. R. Shingleton Smith, in recognition of his services to the profession, especially as one of the founders of the Bristol Medico-Chirurgical Society, and editor for over 20 years of the *Bristol Medico-Chirurgical Journal.*

The Tuberculosis Medical Officer for Cornwall.

There were nearly 70 candidates for the post of tuberculosis medical officer for Cornwall, the salary of which is £500 per annum. The selected candidates were recently interviewed by the committee of the Cornwall county council, with the result that Mr. Charles Roper, M.D., B.C. Cantab., D.P.H. Oxon., was recommended for the post. Dr. Roper is at present assistant medical officer at the Stepney Tuberculosis Dispensary. The appointment is subject to the confirmation of the Cornwall county council and to the approval of the Local Government Board.

Tuberculosis Benefit in Gloucestershire.

At the last meeting of the Gloucestershire county council it was reported that Mr. John Guy, M.D., C.M. Glasg., F.R.F.P.S. Glasg., D.P.H. Camb., had been appointed tuberculosis medical officer for the county and city of Gloucester at a salary of £500 per annum. In view of the number of applicants for sanatorium benefit under the Insurance Act the committee of the county and city councils for tuberculosis had arranged with Dr. A. H. Hoffman, of the Cranham Lodge Sanatorium, to take a minimum of 40 beds for a period of five years, the fee being 35*s.* per bed per week until Dr. Hoffman has made up the number of beds at the institution to 100, and thereafter the charge to be 33*s.* 6*d.* weekly.

Death of Mr. E. F. Gardner, L.R.C.P. Lond., M.R.C.S. Eng.

Mr. Ernest Frederick Gardner recently died at his residence, Watersmeet, Ilfracombe, after a long illness. The deceased, who was a member of a well-known Devonshire family, was born in Ilfracombe, where his father practised as a surgeon for many years. Mr. Gardner received his medical education at Guy's Hospital, qualifying as L.R.C.P. and M.R.C.S. in 1887. After holding the appointments of resident obstetrician and house surgeon at Guy's Hospital and house surgeon at the Evelina Hospital for Sick Children Mr. Gardner engaged in practice in Ilfracombe, and on the death of his father he and his brother carried on the practice. He was on the honorary staff of the Tyrrell Cottage Hospital. Mr. Gardner was very popular and highly respected in Ilfracombe. He was only 48 years of age.

Hospital Sunday at Plymouth.

The sum of £792 has been received by the treasurer of the

South Devon and East Cornwall Hospital as a result of the Hospital Sunday collections made on Oct. 20th, 1912.
Jan. 14th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Working of the National Insurance Act in Edinburgh.

ARRANGEMENTS have been completed for the working of the Act in Edinburgh and Leith. 115 names have been placed upon the panel, estimated to be sufficient for the purpose, and practically all the chemists in the area have notified their intention to work under the conditions laid down. At the last meeting of the profession held on Dec. 6th, 1912, convened by the Provisional Local Committees of Edinburgh and Leith, it was intimated that the Chancellor of the Exchequer was unable to accept the scheme drawn up on behalf of the profession here, his chief objection being to the clause providing for collective bargaining between the Local Medical Committee and the Local Insurance Committee. That being so, there was nothing for it but to consider whether the Act was to be worked locally or not. After a long and representative discussion, on a vote being taken, 64 were against the formation of a panel, 57 were in favour of it, and 32 did not vote. Those who voted for it did so under strong protest, and provisionally till April 14th. Roughly speaking, 150 general practitioners were absent from the meeting, and at the time it was considered that a panel sufficient in numbers would be formed, which was found later to be the case.

Treatment of Tuberculosis in Edinburgh.

The Public Health Committee has approved of the plans drawn up by the city superintendent for the provision of a shelter giving accommodation for 100 additional beds for phthisis patients at Colinton Mains Hospital. The scheme, it is expected, will cost about £5000. It was also decided that after the needs of Edinburgh had been served patients would be admitted from the Midlothian area at a weekly charge of 35*s.* for a period of three months or so.

Health of Leith during 1912.

The birth-rate is stated as 25·9 per 1000, as compared with 25·6 during 1911, and the death-rate as 15·8 per 1000 of population, compared with 16·1 in 1911. Under the Infectious Disease Notification Act there were notified 496 cases in 1912, which shows a reduction of 314 as compared with 1911. During the year 298 cases of pulmonary tuberculosis were notified.

Post-graduate Study in Edinburgh.

A course in tuberculosis has just commenced, the first since the inauguration of the new dispensary buildings in Castle-terrace, the most important unit in the organisation of the Edinburgh antituberculosis scheme.

Edinburgh University.

In the report for 1912 it is stated that six new lectureships were instituted by the University Court, including neurology (Dr. J. J. Graham Brown), physical methods in the treatment of diseases (Dr. Harry Rainy), and a second lecturer on diseases of the skin. The Ordinance concerned with the institution of a chair in bacteriology has also been laid before Parliament, and a draft Ordinance has also been framed for the foundation of the Moncrieff Arnott chair in clinical medicine.

Edinburgh Royal Infirmary.

The managers of the Edinburgh Royal Infirmary have issued their annual report. The total number of patients treated was 12,691, an increase of 81 on the previous year. The total ordinary income showed a decrease of over £1749 compared with that of 1911, and of this over £1339 is caused by falling off in the voluntary subscriptions. This decrease, notably on those from public works and establishments, is ascribed to the introduction of the National Insurance Act. The following notice has been published, and is exhibited in the corridors of the hospital, signed by the superintendent:—

On and after Jan. 15th, 1913, insured persons, being entitled to medical benefits under the Act, will not be treated in the out-patient departments except in accident cases, urgent cases, and suitable consultation cases. All persons applying for treatment will be required to state whether they are insured persons or not, and, if insured, the name of the Approved Society to which they belong must be furnished in each case.

Small-pox in Kirkcaldy.

There have been no fresh cases within the last three weeks, all those under observation have been allowed to go home, and the local authorities therefore consider that the epidemic has been effectually stamped out.

Death of Dr. W. R. Duguid, Sen., of Buckie.

The death of Dr. William Robert Duguid, sen., of Buckie, occurred on the morning of Jan. 10th with startling suddenness. Dr. Duguid went his usual rounds on Jan. 9th, and early on the morning of the 10th he received a call to a patient residing at a farm three miles from Buckie. There he went in his motor, but had to leave the car on the main road and climb a steep hill on foot against a strong north-westerly wind. On entering the farmhouse Dr. Duguid sat down exhausted, and after speaking a few words with regard to his patient, suddenly collapsed and expired, death being due to heart failure. Dr. Duguid celebrated his professional jubilee last May, and a few weeks ago a large sum was raised by public subscription and a commission was given to paint his portrait for public presentation. Several sittings had been given and the portrait is well advanced. Dr. Duguid was born at Udny, Aberdeenshire, in 1841, thus being in his seventy-second year at his death. He was educated at Udny, Aberdeen Grammar School, and Aberdeen University, graduating in arts when he was barely 17 years of age. When he was 21 he began to practise in Buckie, where he remained all his life. A trusted physician and friend of generations of men and women in Buckie, he spent a busy life, giving generously of his hard-earned leisure to any public service calculated to advance the welfare of the community. He was for several years Provost of Buckie, chairman of Rathven school board for nine years, a member of the Scotch Fishery Board for 15 years, ex-president of the Moray Firth Fisheries Association, honorary sheriff-substitute for Banffshire, justice of the peace, surgeon-lieutenant-colonel in the Gordon Highlanders (Volunteers), and president of the Banff, Elgin, and Nairn division of the British Medical Association. Dr. Duguid was predeceased by his wife eight years ago. He leaves a family of four daughters and two sons, one of the latter being Dr. W. R. Duguid, jun., who practised along with his father in Buckie.

Kincardine Practitioners and the National Insurance Act.

At a meeting of the Kincardineshire Insurance Committee held on Jan. 4th it was stated that all the doctors were willing to work the Act. The majority were in favour of the capitation system of payment. There was some difficulty over the income limit, the medical men suggesting that it should be £2 per week. A member of the Committee said that at the present time the Friendly Societies had a great number of members not compulsorily insured. After Jan. 15th they would have no doctor. At first they may be paying 6*d.*, but if they had to insure compulsorily they would probably have to pay 10½*d.* He did not think it was anything less than coercion to confine the income limit to £2 weekly, and he could not support the proposal. The matter was left over for another meeting.
Jan. 14th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Party and Medical Benefit.

THE question addressed to the Chancellor of the Exchequer last week by Mr. John Redmond with regard to the extension of the medical benefit of the National Insurance Act to Ireland, and Mr. Lloyd George's reply that the question was one to be decided by the Irish people, and that he intended to appoint a committee to inquire into the matter, suggest that both the Irish party and the Government are beginning to think favourably of the extension of the benefit. In asking for the withdrawal of the medical benefit from the Bill so far as it concerned Ireland, the Irish Party were acting at the instance of the agricultural part of the community. The Friendly Societies appear now, however, to wish for the benefit, and are using their influence for that end. It is

believed that the societies think they can have the medical benefit, not only for insured persons, but for their dependents, at the same remuneration to the medical man as is paid for insured persons only in Great Britain. The constitution of the committee to be appointed will be a matter of some interest.

A Meeting of Delegates.

A meeting of delegates of the medical profession from all parts of Ireland was held on Tuesday, Jan. 14th, at the Royal College of Surgeons, Mr. Robert Woods being in the chair. A prolonged debate took place with regard to the provisional settlement recently come to between the Dublin Medical Committee and the Dublin Friendly Societies' Union. A resolution was proposed repudiating the action of the Dublin Committee, and calling on medical men who had accepted service on the terms of the settlement to withdraw forthwith. Eventually the latter part of the resolution was deleted. The meeting discussed the arrangements likely to be made for medical certificates as evidence for sickness and disablement benefit. It was held that the grant of £50,000 recently promised to Ireland by the Chancellor of the Exchequer was insufficient for the purposes proposed, and a resolution to this effect was adopted, as well as another demanding for Ireland, in view of the recent additional grant to British doctors, a proportionate grant on the basis of its taxable capacity. It was further resolved that dispensary medical officers should be requested to refuse certificates to dispensary patients under the Insurance Act except on terms satisfactory to Local Medical Committees—this pending the settlement of the question.

The Dublin Clinical Hospitals and Post-graduate Instruction in Tuberculosis.

The scheme of the Dublin clinical hospitals for giving a joint course of instruction in tuberculosis to candidates for employment as tuberculosis officers has come to nothing, as many foresaw would happen. The representatives of the hospitals in claiming recognition of their course from the Local Government Board attached the condition that the course should be regarded as essential for all candidates. The Board had no option but to refuse this condition, as it had already given its recognition to another course conducted by the staffs of the Collier Dispensary and the Alan Ryan Hospital. It is unfortunate that the representatives of the clinical hospitals were unwilling to collaborate with the staffs of these institutions in one course. The education of the future tuberculosis officers has suffered much by their exclusion from the clinical hospitals, and the hospitals themselves will suffer by being out of touch with the tuberculosis work of the country.

Belfast Medical Men and the National Insurance Act.

At a special meeting of the Belfast Division of the British Medical Association held in the Medical Institute, Belfast, on Jan. 9th, Dr. A. G. Robb, the President, being in the chair, it was unanimously held that the pledge and undertaking were still binding on those who had signed them, and that those bound by the pledge could only take service honourably under the Act when it had been constitutionally established that such service might be accepted upon the present terms.—At a meeting of the medical practitioners of Belfast held in the Medical Institute, Belfast, on Jan. 7th, at which there was an extremely large attendance, Sir John W. Byers, chairman of the Belfast Local Medical Committee, presiding, it was unanimously resolve to approve and adopt the resolution passed by the Local Medical Committee at its meeting on Jan. 3rd, which advised the following terms of remuneration for all contract practice within the city area—namely, a capitation basis of 8*s.* 6*d.* per annum, inclusive of medicine, or payment for work done on a scale of fees as laid down, free choice of doctor to be given in all cases. It was also decided, following the advice of the Local Medical Committee, to form within the city area a panel of all practitioners willing to undertake contract practice on the terms stated.

Jan. 14th.

LITERARY INTELLIGENCE.—A new and enlarged edition of Dr. G. E. Herman's "Diseases of Women," revised by the author and by Dr. R. Drummond Maxwell, is announced by Messrs. Cassell for publication at the end of January.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Bread as a Means of Conveyance of Diphtheria.

M. Moreau, of Sens, on Jan. 7th communicated to the Academy of Medicine a report on a small epidemic of diphtheria occurring among people widely distributed, the sole common factor in which appeared to be the use of bread supplied by a certain baker whose wife and daughter were suffering from diphtheria. M. Moreau regarded this bread as the vehicle of contagion, not in consequence, of course, of the inclusion of the bacilli in the dough, for they would have been destroyed by the baking, but through their deposition on the bread from the bedroom of the patients which communicated with the bakery.

Medical Graduates.

The following is the number of graduates at French schools of medicine during the school year 1911–12 :—

School.	State diploma.	University.	Total number of theses.
Paris	402	60	462
Algiers	22	0	22
Bordeaux	147	0	147
Lille	38	0	38
Lyons	149	6	155
Montpellier	104	21	125
Nancy	37	3	40
Toulouse	65	0	65
Beyrouth	25	0	*

* The medical students of Beyrouth are exempt from theses.

The Survival of Organs after Death.

Dr. Alexis Carrel, whose remarkable experiments at the Rockefeller Institute on the life of tissues and organs removed from the body are well known, sent to the Paris Academy of Medicine on Jan. 8th a new communication in which he made known results even more remarkable than those already published by him. Dr. Carrel had removed from cats the entire thoracic and abdominal viscera—the heart, lungs, stomach, intestines, liver, and pancreas—after tying the open vessels. These viscera were placed in a glass vessel in Ringer's solution at a temperature of 38° C. Two openings were made in a piece of Japanese silk used to cover the vessel, one for the trachea and œsophagus, the other for the terminal end of the intestine. By means of a cannula tied in the trachea air was rhythmically pumped into the lungs, thus maintaining artificial respiration. All the organs remained alive, and for many hours, differing from 4 to 13, fulfilled their various functions as if they still formed part of the body. The heart continued to beat, arterial pressure, after a fall at first, rose and was maintained, and the stomach, intestine, and liver continued to function, as was shown by the fact that food introduced into the œsophagus was completely digested in the alimentary canal and the residue ejected at the proper time from the extremity of the alimentary tube. The liver and the pancreas also continued to furnish their respective secretions. This was the first time, as M. Pozzi remarked, that detached organs had remained alive and performed their complex functions by their own means and without recourse to an artificial circulation. The central nervous system had no part in these physiological acts, thus demonstrating to what a degree the autonomy of their exciting elements—that is, the ganglions of the sympathetic system—could be pushed. Consequently, many of our views of the physiology of the nervous system in its relation to organic life must be considerably modified. These experiments, if more striking than Carrel's preceding ones, have not, doubtless, the practical bearing of those which have made it possible to keep alive organs intended for grafting into subjects who have lost the corresponding organs through a surgical operation, or of those which have led to the observation of the development of cells isolated from tumours, from which it is possible that in the future a serum-therapy for cancer may take its origin ; but they nevertheless startle us by demonstrating the functional independence of the various organs carried to a hitherto incredible degree. It cannot, however, be concluded therefrom that it will ever be possible to restore life to a corpse. The essential cells of the nervous system after suspension of their vitality for a short time are definitively dead. Moreover, it is not here a

question of resurrection, but of delayed death. From the viewpoint of pure physiology, however, it is a stupendous work, and one cannot but admire the sagacity and patience displayed by Dr. Carrel.

For Phthisical Cough.

At the Société d'Études Scientifiques contre la Tuberculose Dr. Louis Rénon said recently that the action, either separately or in combination, of peronine (benzyl-morphine-hydrochloride), thebaine (paramorphine), narceine, papaverine, and helenin could be advantageously made use of in phthisical cough. If the therapeutic effect of these substances separately, he said, was well known, the same was not true of them when administered in combination, which method did not merely add to their effects but rather modified them, and often multiplied their therapeutic action. Thebaine and helenin were indispensable in the combinations because of the tonic and excitant action of the thebaine on respiration and circulation, and of the special action of helenin on the cough and of its slightly stimulant effect on the organism. Among the numerous combinations of these different substances many could be recommended, but that which Dr. Rénon found to give the best results was a mixture of peronine and thebaine, one centigramme of each, with two centigrammes of helenin in one pilule or wafer, containing in addition ten centigrammes of sugar of milk. Two such pilules or two cachets were given daily at an interval of five hours or less.

Jan. 13th

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Sick Clubs and the Medical Profession.

IN THE LANCET of Jan. 4th it was mentioned in this column that the Secretary of State for the Interior had arranged a meeting of representatives of the medical profession and of the directors of sick clubs respectively to be held for the purpose of settling the terms of an agreement between both parties. The immediate result was that the committee of the Leipziger Verband—the great fighting union of the medical profession—has informed the Secretary that it would only take part in the meeting when invitation sent to the so-called Reichsverband Deutscher Aerzte was withdrawn. The Reichsverband is a small combination of medical men who are opposed to anything of the nature of medical unionism in general and the free choice system in particular. The members have on numerous occasions attempted to hinder the work of the Leipziger Verband by canvassing for vacant appointments against which the latter had warned intending applicants on account of the insufficiency of the remuneration, and also by procuring medical officers for the clubs whilst a strike of the profession was in progress. The Secretary answered that the proposed meeting would be an informal one, which would not decide any question, but would merely enable the various parties to become acquainted with each other's views, and for this reason he was of opinion that representatives of every medical combination ought to take part in it. The committee of the Leipziger Verband thereupon declined to send delegates to the meeting. This abstention of the Leipziger Verband, which represents the great majority of medical men in Germany, will probably cause the meeting to be abandoned. The medical journals rightly call attention to the singular action of the Government, which would allow an agreement between 25,000 medical men and the clubs to come to an end only for the purpose of upholding the interests of a small association which consists of at most 150 members and which hopes to gain a certain kind of popularity by hindering the work of the militant organisation of the profession.

Foreign Medical Study in German Universities.

Some sensation has been caused by announcements in the daily newspapers and medical journals to the effect that the medical students of the University of Halle were refusing to attend certain clinical lectures as a protest against the overcrowding at these lectures by foreign students. The representatives of the German students have informed interviewers that the number of foreign medical students has increased to such an extent that at present more than a third of all the medical students are foreigners. Many of them who come from distant places do not leave the town during the vacations, as nearly all the German students do; they are, therefore, registered at an early date and so get better places in the lecture-rooms and clinics than the German students, who usually make their appearance just before the beginning of the term. Moreover, a great many of these students do not know enough German to be able to answer the questions put to them during the practical exercises and the examination of cases, so that they hinder the clinical work. A petition complaining of these conditions was addressed to the medical faculty early in the spring of last year, but no answer had been received, so that the students some days before the Christmas vacation decided to absent themselves from the lectures, which on a certain day were attended by the foreign students only, and were accordingly discontinued. This voluntary interruption of their studies is confined to the students of the so-called clinical semesters and does not affect the students of the first semesters, among whom the foreign invasion is not such a burning question. The students of the University of Halle have also invited the students of the other universities to follow their example, and this has been done in Leipzig, Marburg, Giessen, and Heidelberg. The students are also desirous that foreigners should be admitted to the clinics under the same regulations as German students—i.e., after having passed an examination in anatomy, physiology, and natural sciences, the so-called "examen physicum," instead of being admitted without an examination, as has been the case hitherto. If this examination were made obligatory, those who did not pass it would not be allowed to attend the clinical lectures, and the great rush to the clinics would thereby be diminished. The Government has not yet given any decision in the matter. It must be remarked that the great majority of the foreigners studying medicine in Germany are Russian Jews. The Russian Government admits only a very limited number of Jews to the University, 5 per cent. being the maximum allowed by the regulations. It is, therefore, not surprising that would-be students who are debarred from receiving medical instruction in their native country should emigrate to foreign cities, especially those of the neighbouring countries of Germany and Austria, where they form a compact mass in every university. The majority of them are very poor and have a standard of living far below that of the average German student. A meeting of delegates of the German medical faculties has taken place in Halle and has petitioned the German Government to negotiate with the Russian Government for the purpose of removing the restrictions concerning Jewish students so that they should no longer be compelled to come in great numbers to Germany, but could receive their medical training at home. This seems very reasonable and would at once settle all the difficulties, because the number of other foreign students apart from the Russian Jews is comparatively small. It is, however, very doubtful whether the German Government will consent to approach the Russian Government in a question which is essentially a matter of internal politics. And if the German Government did make a representation on the matter it is doubtful whether the Russian Government would be inclined to relax the severe restrictions imposed on the Russian Jews.

Electrical Treatment of Obesity.

Dr. Nagelschmidt lately read a paper before the Berlin Medical Society on a method of reducing obesity. He pointed out that artificial underfeeding alone was not sufficient, but that this must be combined with increased muscular work. Many obese persons, however, were not only disinclined to exert themselves, but had hardly the bodily strength necessary to exercise their muscles properly. This was especially the case when the patients suffered from cardiac diseases and asthma. A French physician has therefore advised the application of electricity in the form of the faradic current to produce contractions of the muscles with little exertion on the part of the patients. Dr. Nagelschmidt has now found that by using the alternating current the same muscular work was performed with less exertion for the patients. He showed an apparatus for the application of the alternating current to a large part of the surface of the body, and he said that the current might be continued for about an hour without any ill-effect to the patient, while the decrease of weight was from 200 to 800 grammes each time that the treatment was employed.

Jan. 13th.

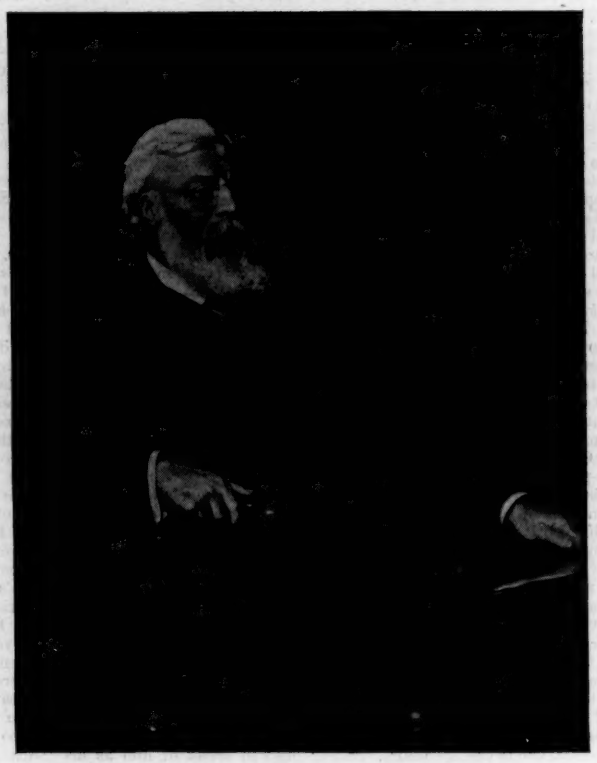
Obituary.

WILLIAM HOWSHIP DICKINSON, M.D. CANTAB., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO ST. GEORGE'S HOSPITAL; HONORARY FELLOW OF GONVILLE AND CAIUS COLLEGE, CAMBRIDGE.

THE death took place on Jan. 9th of Dr. William Howship Dickinson, consulting physician to St. George's Hospital and to the Hospital for Sick Children, Great Ormond-street, and for many years a prominent figure in the medical world of London.

William Howship Dickinson was born in Brighton in 1832, and was educated at Gonville and Caius College, Cambridge, and at St. George's Hospital. At the time when he joined the hospital Mr. Henry Gray, of "Gray's Anatomy" fame, was the lecturer on anatomy, with Mr. Timothy Holmes as his demonstrator; Cæsar Hawkins was the senior surgeon; Sir Prescott Hewitt and George David Pollock were the junior surgeons; and Sir Henry Pitman the assistant physician and lecturer on materia medica. The hospital had a good educational position, and Dickinson, having held all the junior posts, was duly elected assistant physician in 1865, and from that time forward his medical career was closely centred round the school and hospital. He was probably one of the most industrious hospital physicians that ever existed; he visited the institution every day, and as often as not saw all his patients. All new cases admitted under him were not only seen at the earliest possible opportunity, but notes were dictated by Dickinson to his clinical clerks recording the exact physical condition as Dickinson found it on the first visit, and sometimes this was not as the house physician or clinical clerk had found it. He supervised the technique of the simple pathology of his day in respect of all his patients; microscopic slides were prepared for his personal investigation, and he very usually insisted upon the urine being tested in his presence. Going round the wards with Dickinson would resolve itself into a series of informal lectures on clinical medicine and pathology, with occasionally an animated discussion with a surgeon summoned to consultation, a medical registrar, or a house physician. Much shrewd opinion on treatment would then follow, for Dickinson was dogmatic as well as learned. Having considered what was the matter with the patient, he was always prepared to give his reasons for the treatment which he proceeded to adopt. He was an all-round physician of a type that is now rapidly passing from among us. He wrote on nearly all branches of medicine. His advice was most often sought in consulting practice for diseases of the kidney and of children, both because of his well-known book on renal and urinary affections and because of his long connexion with the Hospital for Sick Children; but his contributions to diseases of the nervous, cardio-vascular, and digestive systems were numerous and always worthy of attention both for the matter and for the purity of his Addisonian English. With the exception of a now forgotten Experimental and Pathological Inquiry into the Functions of the Cerebellum (1865), which entailed operations upon snakes, frogs, and fish, his work was based on hospital cases observed during life and carefully checked by the post-mortem results, the statistical method being largely used in arriving at conclusions.



(From an autotype of a portrait by the Hon. John Collier.)

W. Howship Dickinson

In order to form a just impression of Dickinson's influence on contemporary medicine, reference may now be made to some of his more important literary contributions, most of which are referred to in the first edition of Fagge's "Principles and Practice of Medicine" (1886). In his paper on the Changes in the Nervous System which follow the Amputation of the Limbs (*Journal of Anatomy and Physiology*, 1868), he was the first to suggest that prolonged disuse of a nerve is sufficient to lead to its atrophy, thus modifying the second part of Waller's law that every part of a nerve which is separated from its cell of origin degenerates while the rest remains normal. He attacked the embolic hypothesis of chorea, and described arterial hæmorrhages and periarterial degeneration in the brain and cord (1875). From his experience at the Hospital for Sick Children, Great Ormond-street, he wrote on the visceral changes in rickets and on hepatic cirrhosis in children. In a statistical paper on the Morbid Effects of Alcohol as shown in Persons who Trade in Liquor (1872) he proved that the injurious effect of alcohol on the kidney had been exaggerated, and that the incidence of renal changes was practically equal in 149 persons exposed to alcohol and in a corresponding series not so handicapped. He also showed that alcohol favours tuberculosis of all sorts. His observation of hereditary albuminuria in four generations of a family has not perhaps attracted its due share of attention. Although Treitz had long before described uræmic ulceration of the intestine in chronic renal disease, and ascribed it to the irritating effects of ammonium carbonate, Dickinson's account of albuminuric ulceration was entirely independent; he examined 22 cases, including three of gastric ulceration, and brought forward evidence to show that the ulceration was due to previous hæmorrhage into the intestinal wall. By a long series of observations and drawings made by his own hand of sections he showed that the media of the larger arteries is hypertrophied in chronic renal disease. His Harveian Oration on Dropsy (1891) and an elaborate paper on this same subject in the Medico-Chirurgical Transactions for 1892, in which he concluded that the dropsy was truly cardiac though not cardiac *ab initio*, were based on prolonged examination of the cardio-vascular system in renal disease. Influenced no doubt by Fuller's results at St. George's Hospital, he was a strong advocate of

the alkaline treatment of rheumatism and later brought forward statistical evidence in favour of the view that the incidence of cardiac complications is lowered by adding full doses of alkalies to salicylates. In 1897, when president of the Royal Medical and Chirurgical Society, he gave an account of some cases of pure aortic stenosis in which the only murmur is a musical apex bruit due to mitral regurgitation in small volume at high pressure.

During its periods of greatest activity, when morbid anatomy constituted progressive pathology and was advanced by the younger clinicians, Dr. Dickinson was a prominent figure at the Pathological Society of London, of which he was successively secretary (1869–71), vice-president (1872), and president (1889–90). He contributed numerous papers and took part in several important debates, such as those on Diseases of the Lymphatic System, including Leukæmia and Lymphadenoma (1870), on Lardaceous Disease (1879), which he introduced, and on the Morbid Anatomy of Diabetes (1883). On the last two subjects he had previously expressed very definite opinions which, though they have not met with the sanction of general opinion, are of some historical interest. In 1867 he read a paper before the Royal Medical and Chirurgical Society in which he argued that lardaceous or amyloid disease was due to the presence of de-alkalised fibrin in the affected organs, and that this infiltration was caused by the removal of potash which occurred in the suppurative processes responsible for the change. He therefore proposed as a more accurate title "depurative disease." When 12 years later he opened the discussion at the Pathological Society on this subject his views met with considerable criticism and opposition. In 1870, at the Royal Medical and Chirurgical Society, he described as "the morbid changes in the nervous system in diabetes" empty spaces around the blood-vessels, especially the arteries, in the central nervous system. The significance of this change, which was soon widely copied into text-books, was subsequently challenged in a discussion at the Pathological Society by Dr. F. Taylor and Dr. Hale White, and a committee appointed to report on the question came to the conclusion that the nervous system does not present any constant lesion in diabetes and that some of the appearances were due to artefacts.

Dickinson was a student of disease rather than of medical literature, and until the time limit necessitated his retirement from the active staff of St. George's Hospital he was constantly engaged on some clinico-pathological problem or research. Untiring in collecting his data, he stuck to his conclusions against all opposition, and made a vigorous fight for his beliefs. This was exemplified by the controversy on what he termed "the presystolic murmur falsely so-called." Though a notable physician and pathologist in his generation, it seems unlikely that his name will be specially connected with any important advance in the science at which he worked so vigorously; but none the less his personality must have impressed itself for good upon many generations of medical men as a type of the general physician who puts his patient's disease above every other consideration, and whose high object is to advance the general stock of knowledge.

At the Royal College of Physicians of London Dickinson held every appointment save the presidency, and for many years his voice was an influential one in College affairs. Taking the Membership almost immediately upon qualification, he became a Fellow in 1865, and at the time of his death we believe that Sir Hermann Weber was the only Fellow of the College senior to him. He was an examiner for the College for 12 years, his services in this capacity being especially valued, for in his questions he was searching without being complicated, and whilst he was determined to let no candidate pass whose knowledge seemed to be entirely derived from books, he was a sympathetic critic of a young man's views. Though by no means a smooth or easy person in dealing with his contemporaries he was always polite and considerate to pupils and students who could not argue with him on fair terms. He was for a time curator of the College museum, was on the council, and served as Censor in 1885–86 and Senior Censor in 1892. In 1888 he delivered the Lumleian lecture on the Tongue as an Indication of Disease, and in 1891 he delivered the Harveian oration to which we have already referred. His qualities as an examiner in medicine were also recognised by the University of Cambridge, the University of London, and the University of Durham. He was President of the Royal Medical and Chirurgical Society and of the Pathological Society, and was also a Fellow of the New York Academy of Medicine and an honorary Fellow of Gonville and Caius College, Cambridge. He had lived for some years in retirement at Tintagel.

Dr. Dickinson married a daughter of Dr. James Arthur Wilson, once well known as a physician to St. George's Hospital, by whom he had several daughters and an only son, Dr. William Lee Dickinson, who died quite young some eight years ago, and who was also physician to St. George's Hospital and a man of the greatest promise.

PETER REDFERN, M.D. LOND., F.R.C.S. ENG., D.SC. Q.U.I.,

EMERITUS PROFESSOR OF ANATOMY AND PHYSIOLOGY, QUEEN'S COLLEGE BELFAST.

IT was with sincere regret that we recently recorded the death, at an advanced age, of Dr. Peter Redfern, who for many years was one of the most distinguished British teachers of anatomy. On Dec. 17th he celebrated his ninety-first birthday at his seaside home, Donaghadee, co. Down, and was then in wonderful health for his years, but on the evening of that day he developed a cold which rapidly spread as a laryngeal and bronchial catarrh, and caused his death on Dec. 22nd.

Peter Redfern was the second son of another Peter Redfern, an Englishman of scientific attainments living in Chesterfield, where the future anatomist was born in 1821. Young Redfern's general education was received at a local school, his ancient and modern classical instruction being obtained from private tutors. As was the custom of the time for boys entering the medical profession, he was apprenticed for five years, his master being a Mr. Richard Collis Botham, who, in order to give his assistants more scope, took charge of a district of the Chesterfield union and workhouse, where young Redfern had ample opportunities of seeing and treating disease of all kinds. It was about this epoch that Stromeyer had drawn attention to the possibility of curing squint cases by the surgical division of tendons of ocular muscles. Young Redfern, urged on and aided by another assistant (Mr. C. C. Black, afterwards an honours medical graduate of London University), operated on several cases without the knowledge of their master, in the hope that success would atone for want of discipline, with which, perchance, they might be charged. But this was not to be. Mr. Botham could not forgive the indiscretion, and represented the matter as one, amongst others now thought of for the first time, whereby he believed Redfern had endeavoured to enhance his personal reputation at the expense of his master's. Galled by what he conceived to be an unjust accusation Redfern left Botham's house next morning, and having obtained an introduction to Dr. Robert Knox, the famous lecturer on anatomy at Edinburgh, in a few days he arrived in that city. As the young student gained one success after another in Edinburgh, and later at the University of London, Botham's generous disposition lost any unpleasant feeling he once entertained in regard to his disobedient apprentice, and led him to welcome young Redfern again to his house, to take him into consultation with him, and to speak of him as his "distinguished pupil" all the rest of his life. At Edinburgh Redfern in his second year obtained first place with medal and prizes in the subjects of medicine, surgery, and midwifery. At the University of London, where he was one of the earliest medical graduates, he secured gold medals in materia medica and pharmaceutical chemistry. In October, 1844, he graduated M.B. of London University—when he was awarded the gold medal in medicine—and in November, 1847, he took the further degree of M.D., when he gained a gold medal for medicine. He became also in 1851 by examination a Fellow of the Royal College of Surgeons of England, and in the last edition of the Calendar of the College he appears as the oldest Fellow.

While attending a course of lectures in medicine at Edinburgh he came under the spell of that great teacher and observer, Dr. J. Hughes Bennett, but in 1845 he began work as lecturer in anatomy and physiology in Aberdeen, evidently considering that in the northern town there was more scope for his originality. But as the lectureship was unprovided with collegiate endowment and seemed to offer small inducements for a life of labour he resigned, returning later, however, under more favourable circumstances.

It is a remarkable but noteworthy fact that he very much disliked at first the subject of anatomy, of which he was destined to become one of the very greatest British teachers of the Victorian era. It was in 1849 that he published his celebrated paper on Abnormal Nutrition in Articular Cartilages, with Experimental Researches on the Lower Animals, in which he demonstrated that wounds and ulcers in cartilage heal completely, and that such lesions are not the cause of severe pain in disease in joints, as was at that time taught in surgical and pathological works. In many ways during the next ten years he displayed his versatility and scientific acumen. In 1852 he undertook for the Watford Water Company the microscopic examination of the various waters supplied to different parts of London. In 1853 he was engaged as a microscopist in a famous trial in the Edinburgh Court of Session (Gillespie *v.* Russell), in which it was sought to be proved that a certain bed of mineral matter, leased as coal, and used as coal in making gas, was a mineral substance quite different from coal. A paper of his, subsequently published in the *Quarterly Journal of Microscopical Science* for 1855, gives the results of a lengthened and laborious investigation of different coals (200 specimens being examined and 180 sections prepared by his own hands). In 1859, when the British Association met in Aberdeen, he was one of the secretaries of the Physiology Section, and read a paper on the volitional as well as sensorial power of the spinal cord before the Prince Consort, who was president of the meeting. In May, 1860 (on the death of Dr. Hugh Carlisle, the first professor of anatomy and physiology), his connexion with Belfast began, when he was appointed to succeed Carlisle as professor of anatomy and physiology in Queen's College, a post he occupied for a period of 33 years until 1893, when he resigned. Redfern, indeed, was a teacher of anatomy and physiology for the unusually lengthy period of 48 years.

In the original plan of the buildings of the Irish Queen's Colleges no provision was made for the establishment of a faculty of medicine, and as a result he found the anatomical department inadequately provided for, part of the teaching having to take place in the centre of the town (at the back of the Royal Academical Institution) and part at Queen's College. Up to 1860 the largest number of students in anatomy and physiology the College had ever attracted was 79, but after his appointment they rapidly increased, and this increase afforded him the strong argument with which he induced the Government and the Board of Public Works to erect separate anatomical rooms in the grounds of Queen's College. The students, attracted by his teaching, steadily increased in number, and the new rooms proving entirely insufficient, great additions had to be made to them. Finally, in 1865, other buildings were constructed on a greatly extended plan, including a large anatomical museum, making as a whole a most comfortable and convenient suite. Students flocked to study under Redfern from this time forward, for the number of anatomy and physiology students, which up to 1860 did not exceed 79, was 156 in 1866, and rose to 325 in actual attendance in 1881–82. The visitors sent down by the General Medical Council reported that the extent and accuracy of the anatomical knowledge possessed by candidates for degrees were in excess of the requirements for professional life. Redfern and his brilliant colleagues—Andrews and Gordon—indeed brought the greatest credit to the medical faculty of Queen's College, Belfast.

During Redfern's long residence in Belfast his influence and example were felt by many generations as a teacher, his remarkable success being due—apart altogether from his thorough knowledge of the subjects of which he was professor—to his gift of eloquence, his lucidity of demonstration, and to the power he possessed of imbuing his students with an enthusiasm for work for its own sake. He uniformly inculcated that to obtain the highest result in any subject of study it was necessary that entire attention should be given to it. Both by precept and example he inspired students with a real love for their studies and induced them to make large sacrifices of time and attention to secure subsequent distinction. When lecturing he gave those present the idea that the subject he was teaching was of the utmost importance for them to know, in this way living up to the highest ideal. He was a capital draughtsman. His drawings on the blackboard were not prepared beforehand, but grew gradually as he lectured; indeed, in this remarkable gift of being able to make any subject extremely clear by simultaneous drawing and lecturing, Redfern was probably unequalled by any teacher of his time except Huxley. He believed a knowledge of anatomy was the basis of all medical studies, and could only be learned by dissection. He utterly discouraged the use of diagrams by students when they were dissecting, and he would not tolerate the use of prepared specimens. To know anatomy properly he used to say, "You yourself must dissect again and again. You will never learn it by diagrams, wax models, or wet specimens." As a consequence, any student working under him had to know anatomy thoroughly and practically. But while he taught the subject as a science, the fact that he had been surgeon to the Aberdeen Infirmary made him always bring before his students the practical application of anatomy to medicine and surgery. Thus, his demonstration of any region, say, the femoral and inguinal, was made far more effective by its practical application to hernia, and Redfern's insistence on a thorough practical knowledge of anatomy obtained by dissection and applied to surgical emergencies was most valuable to his pupils.

As a professor he was energetic, earnest, and full of enthusiasm. He had a high ideal of duty, and during the college sessions he taught daily for six days in the week, often giving up during a long winter session—from Nov. 1st to the end of April—only three days for holiday—Christmas, New Year's Day, and St. Patrick's Day. He took the greatest care and trouble in preparing his lectures. During the last ten years of his professional life, when the demands for the practical study of anatomy, physiology, and histology by the students themselves had been greatly increased, Redfern spent the evening hours up to 11 o'clock or midnight at the college in preparation for future classes, and that after having been with students during almost the whole daytime. But he was often heard to say that he never enjoyed his study and teaching more than during these latter years, though the demands upon his time and labour had been so greatly increased.

For nearly half a century Redfern was an examiner for medical degrees in different universities—in the University of Aberdeen for 15 years, in the University of London for two separate periods of five years each, and in the Queen's University and the Royal University of Ireland for almost the whole of his professional life in Queen's College, Belfast. It was always a source of regret to him that from the number of subjects he was obliged to teach, and the difficulty of teaching them while they were advancing so quickly and requiring more practical illustrations daily, together with the anxiety and labour of conducting scholarship and degree examinations for five or six weeks yearly, but little time was left him for original investigations.

But his successful position was always quite admitted by his fellow scientists. In 1874, when the British Association visited Belfast (the celebrated Tyndal and Huxley meeting), Redfern was one of the general secretaries, and in 1884, when the British Medical Association paid its first visit to Belfast, Dr. Redfern gave the special address on Physiology, his eloquent and interesting lecture being immensely enjoyed by his old pupils who crowded the room in which it was held. He was an honorary D.Sc. of the old Queen's University of Ireland; a corresponding member of the Society of Biology, Paris; an honorary member of the Royal Academy of Medicine of Belgium; and an honorary member of the Ulster Medical Society.

Being blessed with an affectionate wife and a large and attached family, he generally spent the intervals between college sessions and university examinations at his seaside residence, near Donaghadee, refreshing himself by the cultivation of flowers, fruit, and shrubs, every one of which he planted with his own hands. It was to this circumstance he attributed his ability to undergo the severe strain of teaching and examining during so long and active a life. With him then has passed away one of the scientific giants of the Victorian era.

Dr. Redfern was married to Miss Youngson, a member of a much respected Aberdeen family. She was a distant relative of the great chemist Joseph Black, who was professor of medicine and chemistry at Edinburgh. Dr. and Mrs. Redfern had three sons (one of whom, Dr. J. J. Redfern, is physician to the Croydon Hospital), and five daughters (one of whom is the wife of Dr. W. H. Thompson,

professor of physiology in Trinity College, Dublin). We tender our sincere sympathy to Mrs. Redfern and her family in the death of Dr. Redfern.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. George C. Crandall, professor of medicine in the University School of Medicine, St. Louis.—Dr. O. Pachmayr, surgeon-general in the Bavarian army.—Dr. Seidel, of Jena, medical Privy Councillor.—Dr. O. V. Petersson, formerly extraordinary professor of pædiatry in the University of Upsala.—Dr. P. J. Wising, formerly professor in the Stockholm Medical School.—Dr. A. J. Krychka, formerly professor of pharmacology in the University of Warsaw.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND. — At the First Professional Examination of the Conjoint Board, held on Dec. 31st, 1912, and Jan. 1st, 2nd, and 3rd, the following candidates were approved in the under-mentioned subjects:—

Chemistry and Physics.—Vivian Haweis Butcher, St. Bartholomew's Hospital; Ricardo Calvo, St. Thomas's Hospital; Douglas Alexander Dyer, Middlesex Hospital; Philip Green, Guy's Hospital; Edwin Gabriel Harris, London Hospital; William Irving FitzGerald Powell, London Hospital; Douglas Sherrin Pracy, St. Bartholomew's Hospital; Richard Harold Cotter Pryn, Guy's Hospital; Frank Neon Reynolds, St. Thomas's Hospital; Arthur Rodd, Plymouth Technical School and University College; and Gordon Ernest Lovell Simons, Guy's Hospital.

Chemistry.—Adolfo Arias, St. Bartholomew's Hospital; Henry Hutton Castle, St. Thomas's Hospital; Albert Victor Spurgeon Davies, St. Mary's Hospital; Ahmed Mostafa El-Mishad, Cairo and King's College; Richard Moser, St. Bartholomew's Hospital; and Basil Lyndon Skeggs, St. Bartholomew's Hospital.

Physics.—John Ryther Steer Bowker, Sydney and Middlesex Hospital; El Sayed Gouda, Cairo and London Hospital; Frank James Harrington, Guy's Hospital; Walter Ralph Gill Hearnden, Guy's Hospital; Frederick Hunter Hyland, Leeds University; Mabel Marian Ingram, London School of Medicine for Women; Thomas William Le Mesurier, London Hospital and Birkbeck College; Pierce Lloyd-Williams, Royal Dental Hospital; Arthur Neil McMillan, Middlesex Hospital; Anis Mishriky, St. Mary's Hospital; Denys Revell Reynolds, John Harris Ekin Sandford, and Thomas Fernando Zerolo, St. Bartholomew's Hospital.

Biology.—Edward Beric Alabaster, Birmingham University; Percy Banbury, St. Thomas's Hospital; William John Colborne, Charing Cross Hospital and King's College; Jane Crawford, London School of Medicine for Women; Ahmed Mostafa El-Mishad, Cairo, Charing Cross Hospital, and King's College; John Harold Ewen, St. Mary's Hospital; Ahmad Faiq, University College; Noel Edward Faskeu, Guy's Hospital; Farid Yusif Hassaballa, Cairo and King's College; Walter Ralph Gill Hearnden, Guy's Hospital; Mohammed Ibrahim, Middlesex Hospital; John Macadam, St. Bartholomew's Hospital; Arthur Neil McMillan, Middlesex Hospital; William Irving FitzGerald Powell, London Hospital; Richard Harold Cotter Pryn, Guy's Hospital; Arthur Rodd, Plymouth Technical School and University College; John Harris Ekin Sandford, St. Bartholomew's Hospital; Basil Campbell Ward Simpson, Guy's Hospital; Abbass Hilmy Talaat, Middlesex Hospital; and Cecil Vincent-Brown, Guy's Hospital.

At the Second Professional Examination in Anatomy and Physiology, held on Jan. 2nd, 3rd, 6th, and 7th, 82 candidates presented themselves, of whom 35 per cent. were rejected and 65 per cent. were approved. The following are the names of the successful candidates:—

Henry Searle Baker, St. Bartholomew's Hospital; Kenneth Leslie Bates, Guy's Hospital; Joseph Herbert Bayley, London Hospital; Satish Chandra Biswas, Calcutta Medical College and St. Mary's Hospital; John Pritchard Bracken, University College; Arthur Stanley Carter, Middlesex Hospital; John Edward Clark, Guy's Hospital; Stephen Walter Coffin, Guy's Hospital; Stephen Andrew Cornelius, University College; Reginald Curie, Guy's Hospital; Delphine Gertrude D'Abreu, L.M. and S. Punjab, Punjab University; Charles Wilmot Dias, L.M. and S. Ceylon, Ceylon Medical College and University College; Cecil Lucas Donne, Middlesex Hospital; Wilfred Angel Easton, Guy's Hospital; John Eric Evans, Liverpool University; Arthur George Bissett Fenwick, St. Thomas's Hospital; Sidney William Fisk, Middlesex Hospital; Harold Percy Gabb, University College; Suresh Chandra Ghosh, Calcutta Medical College; Colin Charles Gordon Gibson, Guy's Hospital; Geoffrey Dowson Gripper, Guy's Hospital; Carl Gustaf Waldemar Hahr, King's College; Rupert Bannatyne Hick, St. Mary's Hospital; Richard Annesley Holmes, Guy's Hospital; William Andrew Hotson, Westminster Hospital and King's College; Henry Barry Hyde, St. Thomas's Hospital; Vincent Coram James, Middlesex Hospital; Samuel Durham Lodge, Leeds University; Guyon Lynden-Bell, King's College and St. George's Hospital; Alexander Joseph Vincent McDonnell, London Hospital; José Miguel Madariaga, St. Thomas's Hospital; Robert Paul Scott Mason, Middlesex Hospital; Ismail Mortada, B.A. Cantab., Cambridge University and University College; Edgar William Mottau, Ceylon Medical College and University College; Rhys Vaughan Powell, Cardiff and King's College; Jagan Nath Puri, London Hospital; Kotz Venkata Ramana Rao, Madras Medical College, Charing Cross Hospital, and King's College; Hallock Ratnarajah, Ceylon Medical College and Middlesex Hospital; Charles Reginald Reckitt, London Hospital; Ralph Leslie Robinson, B.A. Oxon., Oxford University and University College; Laurence Cecil Sebastian Roche, B.-ès-Lettres, St. Thomas's Hospital; Alan Filmer Rook, Guy's Hospital; John Rowland, St. Thomas's Hospital; Sydney Frank Simpson, King's College; Robert Cyril Wilmer Staley, Guy's Hospital; John Greet Stevens, Guy's Hospital; Arthur Sunderland, Charing Cross Hospital and King's College; Henry John Hugh Symonds, King's College; Rufus Clifford Thomas, Cardiff and University College; Cecil Pembrey Grey Wakeley, King's College; Frederick Langton Webster, Manchester University; Nathan Judah Wigram, Sheffield University; and Henderson Whyte, London Hospital.

At the quarterly examination in Practical Pharmacy held on Jan. 9th, the following candidates were approved:—

Hallowes Lloyd Addison, King's College Hospital; Charles Sydney Atkin, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Charles Layton Balkwill, Birmingham University; George Arthur Batchelor, St. Mary's Hospital; Stanley Samuel Beare, L.D.S. Eng., Middlesex Hospital; Hugh Stanford Bryan, London Hospital; Arthur Alleyne Kingsley Conan Doyle, St. Mary's Hospital; William Farquharson, St. Mary's Hospital; Harry Hope Fisk, St. Mary's Hospital; Henry Judson Grimshaw, Liverpool University; David Marcus Hanson, Queen's University, Belfast; Spencer Frederick Harris, Middlesex Hospital; Oswald Ryle Horwood, London Hospital; William George Johnston, St. Mary's Hospital; David William Jones, Guy's Hospital; John Vollans Lambert, L.D.S. Eng., Middlesex and private study; Frank Graham Lescher, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; James Arthur Lilley, London Hospital; Joseph Lloyd, Westminster Hospital; Charles Harry Greville Penny, L.D.S. Eng., Guy's Hospital; John Precopoulos, Charing Cross Hospital; Clive Watney Roe, Charing Cross Hospital; Bernard Edward Patrick Sayers, Middlesex Hospital; Arthur Dighton Stammers, London Hospital; Rex Stansfeld, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Edward Wing Twining, University College Hospital; Geoffrey Legh Wilkinson, Birmingham University; Cecil William Wilson, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the Royal College of Surgeons on Jan. 9th the undermentioned diplomas were conferred upon the following gentlemen who have now complied with the respective by-laws:—

Diploma of Fellow.—Matthew Robert Cecil MacWatters (Captain I.M.S.), M.B., B.S. Lond., L.R.C.P., M.R.C.S., King's College and St. Bartholomew's Hospitals.

Licence in Dental Surgery.—Henry Oswald Dumayne, Guy's Hospital; and Stanley Maddox Gardner, Westminster, Middlesex, and Royal Dental Hospitals.

At the Preliminary Science Examination for the Licence in Dental Surgery held on Dec. 31st, 1912, and Jan. 2nd and 3rd, the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—John Laurence Barber, Holt Technical School, Birkenhead; Francis William Crook, Guy's Hospital; Leopold Harold Cross, Royal Technical Institute, Salford; Charles Frederick Hawkins, Grammar School, Cirencester; Pierre Jean Hugo, Guy's Hospital; Hendrik Christoffel Marais, Royal Dental Hospital; Reginald William May, South-Western Polytechnic; Albert Victor Milnes, Manchester Municipal Technical School; Arthur Llewellyn Newman, Brighton Technical College; Thomas Leslie Nichols, Birmingham Municipal Technical School; Stanley James Peatfield, Brighton Municipal Technical School; Henry Montgomery Scott Pillow, Norwich Technical Institute; Stanley Edwin Pomeroy, London Hospital; Reginald Joseph Ryland, Guy's Hospital; Roland Edward Sissons, Leeds University; Reginald Walter Kingwell Skinner, Hartley College, Southampton; Norman Leslie Smallbone, London Hospital; Charles Herbert Davenport Smith, Royal Dental Hospital; Michael Christian Vos Thom, Guy's Hospital; Rudall Woodliffe Thomas, London Hospital; Sydney Granville Townley, Simon Langton School, Canterbury; Percival Albert Tucker, Royal Albert Memorial College, Exeter; Arthur Folliott Tunstall, Polytechnic Institute; Petrus Lafras van Schalkwijk, Guy's Hospital; Hampdon Wallis, Birkbeck College; George Rodney Winter, Darlington Technical College; and Samuel Adolf Woolf, Guy's Hospital.

Chemistry.—Philip Eric Bernhard, Guy's Hospital; George Rowland Dunston Bradfield, Royal Albert Memorial College, Exeter; Thomas Ernest Brevetor, Polytechnic Institute; Stanley Willoughby Augustus Davis, University College, Cardiff; Harold Greaves, Municipal Technical School, Leicester; Reginald Charles Pinniger, Royal Albert Memorial College, Exeter; Leslie George Rldout, Royal Dental Hospital; Dudley Francis Small, Guy's Hospital; John Speak, Darlington Technical College; Samuel Ogden Stewart, Liverpool University; and Leslie Horace van der Pant, Royal Dental Hospital.

Physics.—Howard Bates, Liverpool University; John Roland Humphreys, Liverpool Technical School; Alfred Edward Poole, Sheffield University; Wessel Johannes Pretorius, Guy's Hospital; Simon Sanders, Guy's Hospital; Cecil Stanley Southwell, Birkbeck College; William Lawrence Patrick Watterson, Charing Cross Hospital; and Robert Aloysius Worsley, Liverpool University.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination (Parts I. and II.), held on Jan. 6th, 8th, and 9th, the following candidates were successful:—

Materia Medica and Pharmacy.—J. C. P. Bayley, Manchester; J. D. Ferguson, Durham; and C. T. Gasking, Liverpool.

Anatomy.—J. B. Fairclough, Leeds; J. D. Ferguson, Durham; L.

Kahan, Lausanne and London Hospital; G. Nootl, Guy's Hospital; N. W. Rawlings, Manchester; J. Totton, Guy's Hospital; and G. C. Wright, London Hospital.

Physiology.—C. G. Bunn, Charing Cross Hospital; J. D. Ferguson, Durham; W. Fox, Charing Cross Hospital; H. C. C. Hackney, King's College Hospital; L. Kahan, Lausanne and London Hospital; G. Nootl, Guy's Hospital; N. W. Rawlings, Manchester; J. Totton, Guy's Hospital; and G. C. Wright, London Hospital.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. A. Czerny, professor in Strasburg, has been appointed to the chair of Pædiatry, in succession to Dr. Heubner, resigned.—*Bologna:* Dr. Pietro Jullio has been recognised as *privat-docent* of Physiology.—*Catania:* Dr. Francesco Valenti has been recognised as *privat-docent* of Medical Pathology.—*Copenhagen:* Dr. W. Reinsholm has been recognised as *privat-docent* of Surgery.—*Erlangen:* Dr. Hermann Königer, *privat-docent* of Medicine, has been promoted to an Extraordinary Professorship of Medical Propædeutics and the History of Medicine.—*Freiburg*: Dr. A. Hauptmann has been recognised as *privat-docent* of Psychiatry.—*Heidelberg:* Dr. R. Siebeck has been recognised as *privat-docent* of Medicine and Dr. Walter Gross as *privat-docent* of Forensic Medicine.—*Königsberg:* Dr. P. Bartels, of Berlin, has been recognised as *privat-docent* of Anatomy.—*Rome:* Dr. Arnaldo Biasotti has been recognised as *privat-docent* of Clinical Chemistry.—*Utrecht:* Dr. W. E. Ringer has been recognised as *privat-docent* of Physiological Chemistry.

GRESHAM LECTURES.—Four lectures will be delivered on Jan. 28th, 29th, 30th, and 31st, at 6 P.M., by Dr. F. M. Sandwith, Gresham professor of physic, at the City of London School, Victoria Embankment, London, E.C. The subject of the lectures will be the Relief of the Sick and Wounded in Time of War.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A meeting of the general council of King Edward's Hospital Fund for London was held on Jan. 13th at the offices of the Fund, 7, Walbrook, E.C. There were present: Sir W. S. Church (in the chair), Sir Savile Crossley (honorary secretary), Sir Horace Marshall, Sir William J. Collins, Sir E. Cooper Perry, Sir John Craggs, Sir John Tweedy, Dr. Edwin Freshfield, Mr. Robert Fleming, Mr. John G. Griffiths (honorary secretary), and Mr. Albert G. Sandeman. Sir Savile Crossley stated that the governors had appointed the following new members of the general council: The Rev. W. L. Watkinson, D.D., in the place of the late Rev. T. Bowman Stephenson, D.D.; the Right Hon. Sir T. Vezey Strong, Sir John Tweedy, Mr. Robert Fleming, and Mr. A. E. Sydney. The order of appointment, signed by the governors, of the members of the general council, members of committees, and officers for the year 1913, was read. The resolutions providing for the work of the Fund for 1913, which were approved at the meeting of the governors and general council held at St. James's Palace on Dec. 18th, 1912, were formally adopted.—Among the latest contributions to the Fund is the annual subscription of the Queen of £105.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—A quarterly court of the directors of this society was held on Wednesday, Jan. 8th, Sir Thos. Boor Crosby, the President, in the chair. Sixteen directors were present. Two gentlemen were elected members of the society, and three members had died since the last court. The sum of £514 was paid in December as a Christmas present to the widows and orphans in receipt of grants, each widow receiving £10, each orphan £3, and each orphan on the Copeland Fund £10. This was in addition to the usual half-yearly grants. £1313 10*s.* were voted for the payment of the half-yearly grants. An application for relief was received from the widow of one of the members on behalf of herself and five orphans; her late husband had paid in subscriptions £16 16*s.* The court voted a grant at the rate of £50 per annum for the widow and £20 per annum for each orphan, making a total grant of £150 per annum. In addition, the widow will probably receive at Christmas £10, and each orphan £3, bringing the total amount she will receive from the society up to £175 per annum. A more striking example of the advantages of joining the society can hardly be shown. The invested funds of the society now amount to £101,600. Membership is open to any registered medical practitioner who, at the time of his election, is resident within a 20-mile radius of Charing Cross. The annual subscription is 2 guineas. Special terms for life membership. Further particulars and application forms for membership may be obtained from the secretary at the offices of the society, 11, Chandos-street, Cavendish-square, W.

PRESENTATION TO A MEDICAL PRACTITIONER.—At Weston-super-Mare, on Jan. 6th, Mr. William Fligg, M.B., C.M. Edin., M.R.C.S. Eng., D.P.H. Cantab., was presented by the members of the "Cecil Pigott" Lodge of Oddfellows with a silver tea-set and a silver cruet-set, suitably inscribed, as a mark of respect and appreciation for his services as surgeon during the past 15 years.

BACTERIOLOGY IN ARGENTINA.—The Hygienic Council of the Argentine Government has established a new bacteriological institute in Buenos Aires under the direction of an Austrian bacteriologist, Dr. Rodolf Krauss, who will prepare sera and vaccines needed in the country which have hitherto been imported. He will also devote himself to the scientific investigation of the diseases which are especially prevalent in Argentina.

THE LONDON HOSPITAL MEDICAL COLLEGE.—A course of three lectures in clinical surgery will be delivered by Mr. E. Hurry Fenwick, F.R.C.S. (professor of urology and consulting surgeon to the London Hospital), on Monday, Wednesday, and Friday, Jan. 20th, 22nd, and 24th, at 1.30 P.M., in the clinical theatre of the hospital. The subject of the lectures will be the Hæmatogenous Infections of the Kidney, and the attendance of members of the medical profession is invited.

METROPOLITAN HOSPITAL SUNDAY FUND.—A special meeting of the council of the Hospital Sunday Fund will be held shortly at the Mansion House to consider, *inter alia*, a resolution of which the Rev. W. Hardy Harwood and Sir Henry Burdett have given notice, as follows:—

That the laws of the constitution of the Hospital Sunday Fund be referred to a small special committee of the Council to bring up rules or by-laws regulating the procedure which shall in future govern the proceedings at the meetings of constituentt, and that these by-laws, when approved by the Council, shall be laid before a special meeting of the constituents to be held at the earliest possible date.

DEATHS OF CENTENARIANS.—The *Times* states that the burial took place on Jan. 5th in the Old Churchyard, Midleton, East Cork, of Mary Fehily, whose death occurred at the age of 104. She was an old-age pensioner from the time the Act came into force and was probably the oldest woman pensioner in Ireland. She was born five miles from Midleton, and was a smoker for years.—Our contemporary also announced on Jan. 7th the following: "On Jan. 3rd, at Minster, Isle of Thanet, Ann, widow of the late Daniel Swinford, of Minster, in the 100th year of her age."

UNIVERSITY OF LONDON.—A course of 21 lectures on "The Protozoa" will be given at the Lister Institute of Preventive Medicine, Chelsea, by Professor E. A. Minchin, F.R.S. (University Professor of Protozoology), at 5 P.M., on Mondays, Wednesdays, and Fridays, commencing on Monday, Jan. 20th. Each lecture will be followed by an exhibition of microscopic preparations illustrative of the subject of the lecture. The course is intended to provide instruction (*a*) to students past the intermediate stage—i.e., to those preparing for the B.Sc. examination, pass or honours, or taking "protozoa" as a special subject for the B.Sc. examination, or to those preparing a thesis upon the group for the D.Sc. degree; (*b*) for medical men and others interested in the practical aspects of protozoology. The course is open free (1) to all members of the University, (2) to all medical men or registered medical students, and (3) to other persons on application to the academic registrar.—Dr. Carl Spengler's Methods for the Early Diagnosis and Control of the Specific Treatment of Tuberculosis will be dealt with in a course of six lectures and demonstrations, with practical work, at the Department of Bacteriology of King's College, London (University Laboratories, 62, Chandos-street, Strand, W.C.), by Mr. W. H. Fearis, bacteriological assistant to Dr. Spengler. The class will meet on Monday and Thursday afternoons, commencing Monday, Jan. 20th, and all particulars with regard to fees can be obtained from Professor R. T. Hewlett at the laboratories.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Medical Bill.

Mr. BOOTH has given notice that he will move in the House of Commons after a second reading of the Medical Bill:—"That it be an instruction to the Committee on the Bill to insert provisions for altering and reconstructing the basis of election to the General Medical Council and for the removal from such Council of the Representatives of the Royal College of Surgeons of England, the Royal College of Physicians of London, the Society of Apothecaries of Edinburgh, the Royal Colleges of Physicians and of Surgeons, Edinburgh, the Royal College of Physicians and Surgeons, Glasgow, the Royal Colleges of Physicians and Surgeons of Ireland, the Apothecaries Hall, Ireland, as being licensing medical corporations who have used their influence to prevent members of the medical profession from carrying out the provisions of a Statute of the Realm."

HOUSE OF COMMONS.

WEDNESDAY, JAN. 6TH.

Cases of Small-pox in Kirkcaldy.

Mr. WILKIE asked the Secretary for Scotland whether his attention had been drawn to the fact that the two men who died from small-pox in Kirkcaldy prior to Oct. 24th, and whose condition as to vaccination was returned as doubtful, had been entered in the birth registers as successfully vaccinated; and whether he would have the official records of this epidemic amended accordingly, and take steps to ensure that before cases were entered as doubtful the registers should be searched in order to prevent such inaccuracies as had been brought to light in the present instances.—Mr. MCKINNON WOOD (in a written answer) replied: My attention has been drawn to the fact referred to by my honourable friend. I am informed that after the two men referred to had been carefully examined by the medical officer of health he could find no trace of any vaccination mark. It was no part of his duty to search the register for certificates of vaccination, and from his observation he was justified in returning the cases as doubtful. I am calling the attention of the local authority to these cases and suggesting that they should make the necessary alteration in any official records of the outbreak, but I do not consider it necessary or practicable to prescribe any general rule of the kind referred to in the last part of my honourable friend's question.

THURSDAY, JAN. 9TH.

The Additional Grant for Medical Benefit.

Mr. CASSEL asked the Prime Minister whether it was proposed that any additional grant out of public moneys should be made towards medical benefit in respect of the first three months from Jan. 15th, 1913; and, if so, when it was proposed to obtain the sanction of the House thereto.—Mr. ASQUITH answered: The reply is in the negative. The whole cost of the provision of medical benefit for the period referred to in the question will be met out of the funds available under the National Insurance Act.

Work of Medical Men under the National Insurance Act.

Mr. RUPERT GWYNNE asked the Secretary to the Treasury whether he would say how many doctors per 1000 of insured persons had the Insurance Commissioners decided to be necessary to secure an adequate medical service in rural and urban areas, respectively, in order to set up a panel in such areas.—Mr. MASTERMAN said in reply: The number of insured persons for whom a doctor on the panel can properly be responsible must necessarily vary according to the circumstances of each particular case, and it is therefore impracticable to fix any maximum number, either for all areas or for urban or rural areas respectively. In deciding in each case whether adequate medical service has been secured, the Commissioners have regard to all the circumstances, and they are, of course, guided to a great extent by the advice and recommendation of the Local Insurance Committee. According to the experience of contract practice of a similar character in the past, every 1000 persons on a list would involve on an average 13 attendances a day, of which eight or nine would be surgery calls and four or five visits at the patients' home for 300 days' work in the year.

Mr. WORTHINGTON EVANS: Will the right honourable gentleman say that a panel would be adequate with one doctor for 5000 people, or would he give some general idea of what would be considered adequate?—Mr. MASTERMAN: I could not give any general statement, but certainly I do not anticipate one doctor will have to have 5000 patients in any case.

The Selection of Insured Persons.

Sir PHILIP MAGNUS asked the Secretary to the Treasury whether his attention had been called to the case of a doctor who had only consented to join a panel on the understanding that he would be required to treat a small and strictly limited number of insured persons; and whether the Commissioners proposed to allow such a bargain to be made with a Local Insurance Committee.—Mr. MASTERMAN said in reply: The answer to the first part of the question is in the negative. Every practitioner on the panel has a right to select the insured persons whom he undertakes to treat, subject, of course, to the distribution—and so far as practicable under arrangements made by the several practitioners on the panel—of the insured persons who have failed to make any selection, or who have been refused by the practitioner whom they have selected.

Hospital Accommodation for Cases of Tuberculosis.

Mr. BURNS (President of the Local Government Board) said, in reply to Mr. GODFREY LOCKER-LAMPSON: The number of beds in isolation hospitals which had been approved by the Local Government Board under the National Insurance Act for the treatment of tuberculosis is 1732.

Mr. G. LOCKER-LAMPSON: Would the right honourable gentleman say what steps he proposes to take supposing an epidemic breaks out and those beds are wanted?—Mr. BURNS: In that case we have beds for both classes of disease.

Ireland and Medical Benefit.

Mr. JOHN REDMOND asked the Chancellor of the Exchequer whether, in view of the additional grant which it was proposed to make in respect of medical benefit under the National Insurance Act in Great Britain, he would consider the question of devoting a sum of money towards making good the cost of certificates for sickness and invalidity benefits in Ireland; whether he was still of the view that the extension of medical benefits to Ireland was a matter to be decided by the wishes of the Irish people themselves; and whether he had considered the suggestion of the appointment of a representative commitee to consider this latter question.—Mr. LLOYD GEORGE wrote in reply: The Government are certainly still of opinion that the question of extending medical benefit to Ireland is one to be decided according to the wishes of the Irish people, and I propose at an early date to appoint a representative committee to consider the matter. Meantime the Government will submit proposals for the grant of a sum of £50,000 towards expenses incurred in Ireland in connexion with the National Insurance Act, in consequence of the absence of medical benefit in that country, to be expended in accordance with the scheme to be submitted to the Treasury by the Irish Insurance Commissioners.

Emergency Calls of Insured Persons in London.

Mr. GLYN-JONES asked the Secretary of State for the Home Department whether, in view of the fact that insured persons might desire in an emergency to obtain at night-time the services of a medical practitioner on the panels under the National Insurance Act, he would make arrangements whereby such lists of doctors, if supplied by the Insurance Committees, might be inspected at police stations within the metropolitan area.—Mr. MCKENNA furnished the following written reply: I am glad to inform my honourable friend that the Commissioner of Police is able to make tentative arrangements to carry out this suggestion.

The Proposed Tuberculosis Order.

Mr. CHARLES BATHURST asked the Chancellor of the Exchequer whether, in view of the fact that the slaughter under the proposed Tuberculosis Order of the Board of Agriculture of bovine animals deemed to be tuberculous would be carried out in the interests of the general public, and especially of milk consumers in the towns, and the reluctance of local authorities to put into effective operation Acts of Parliament and administrative orders which increased the already heavy burden of local taxation, he would authorise the payment of the whole or, failing the whole, three-quarters of the compensation moneys required for the purpose out of the Exchequer instead of imposing a moiety of such charge upon the ratepayers in the area of production.—Mr. LLOYD GEORGE replied: I cannot see my way to ask Parliament to provide from the Exchequer more than the proportion of one-half already announced.

A Hong-Kong Medical Appointment.

Mr. STEWART asked the Secretary of State for the Colonies whether Dr. Johnson had been appointed to the office of principal civil medical officer of the colony of Hong-Kong and given thereby seniority over Dr. Bell, who had acted upon four occasions for long periods as principal civil medical officer to the satisfaction of the whole colony; and, if so, why had Dr. Bell, who was senior to Dr. Johnson in the Colonial Service, been passed over; and would his pension be thereby considerably less than it would have been had he been given an appointment to which he had reasonably felt himself entitled after his many years of efficient service.—Mr. L. HARCOURT replied: Yes, Sir. The recent vacancy in the headship of the medical department of Hong-Kong was not filled up by promotion in the colony because the Governor did not recommend that course. Seniority by itself gives no claim to such a post, nor does the fact that an officer has acted in the post. Pensions in Hong-Kong, as elsewhere, depend upon the length of an officer's service and the amount of salary he is receiving at the time he quits the service.

Mr. STEWART: May I ask the right honourable gentleman to give some further consideration to a very deserving colonial officer who has been severely superseded at a time when his career is drawing towards an end?—Mr. L. HARCOURT: I do not say anything in the nature of criticism, but I think it very undesirable that this House should discuss the personal merits as between two or three candidates for a post. Of course, I have considered very carefully the merits of the different candidates for the post and have come to my decision accordingly.

Small-pox Isolation Hospitals.

Mr. BLACK asked the President of the Local Government Board whether he was aware that in a report recently issued by the Department on isolation hospitals, by Dr. H. Franklin Parsons, the doctor stated that there was no near prospect that local authorities would find it unnecessary to be provided with hospital accommodation for the isolation of infectious diseases other than small-pox, though the scale on which such accommodation might be needed would vary in different districts; whether he agreed with the view therein expressed; and, if so, why he considered there was a near prospect of further hospital accommodation for the isolation of small-pox being unnecessary.—Mr. BURNS wrote in reply: The paragraph in Dr. Parsons's report to which reference is made is one dealing with the case of hospitals for diseases other than small-pox. The following paragraph deals with the question of small-pox hospitals, and there is no suggestion in it that small-pox hospitals are as yet unnecessary.

The Health of Spelter men.

Replying to Mr. C. DUNCAN, Mr. MCKENNA said: The conditions of the spelter industry have recently been made the subject of careful inquiry, and as a result new regulations were brought into force as recently as October, 1911, for the purpose of safeguarding the workers against the dangers incident to the industry. No evidence has since been brought to my notice to show that the regulations are inadequate for the purpose of securing the workpeople from the danger of lead poisoning.

MONDAY, JAN. 13TH.

The Right to Join a Panel.

Sir ARTHUR GRIFFITH-BOSCAWEN asked the Secretary to the Treasury whether he could state whether a doctor who joined a panel under the National Insurance Act after the official list of the panel had been published could begin to undertake work immediately he joined or whether

he would have to wait till the next publication of the names on the panel; and whether a County Insurance Committee could refuse to pay him for services rendered under such circumstances.—Mr. MASTERMAN said in reply: In any district where the normal panel system is in force a medical man can join a panel at any time. His name would not be included in the published list until such time as the Insurance Committee issued a revised list of practitioners on the panel. He would be entitled to receive payment in respect of insured persons who elect to be treated by him, and whose treatment he undertakes as from the date on which he joins the panel. Those insured persons who do not express a wish to be attended by any particular doctor will be assigned by the Insurance Committee to doctors on the panel, and as far as possible under arrangements made by the practitioners on the panel at the time.

Refusal of Insured Persons as Patients.

In answer to Mr. CHANCELLOR, Mr. MASTERMAN stated that in ordinary circumstances the results of a medical man refusing a particular insured person would be merely that he would not be responsible for and would not receive remuneration in respect of that insured person.

Professional Secrecy and Insurance Records.

Mr. KING asked the Secretary to the Treasury whether insured workers under the National Insurance Act must expect that records of their ailments, even of a delicate nature, would pass into the hands of local and State officials, as stated widely in certain quarters; and whether the Insurance Commissioners would take measures to prevent any infringements of the reticence and secrecy which the medical profession were supposed to observe concerning their patients' cases.—Mr. MASTERMAN replied: The statements to which I am very glad that my honourable friend has called attention are absolutely incorrect. The only records which are to be kept are those which will be entered in the prescribed form of day-book. This day-book will be in the safe custody of the medical man. Nobody except the medical man can have access to it. Those leaves of the day-book which pass out of the medical man's hands are perforated, so that, while the part containing the name and address of the patient and the attendances (but not the nature of the illness) is sent to the Insurance Committee, the other part containing the nature of the illness and certain other particulars (but not anything by which the patient can be identified) will not go to the Committee but will be used for statistical purposes only. In this way absolute secrecy will be secured, and any danger of breach of professional confidence entirely avoided.

The General Medical Council and Insurance Agreements.

Mr. BOOTH asked the Secretary to the Treasury whether, seeing that the Medical Act, 1858, Section 29, gave the General Medical Council disciplinary powers enabling them to strike off the Medical Register practitioners who should be judged by the Council to have been guilty of infamous conduct in any professional respect, and that the Council had regarded advertising by a medical practitioner as constituting an offence under that section, he would report to the General Medical Council, with a view to disciplinary action being taken, the names of those practitioners who had entered into signed and stamped contracts with insurance committees to treat insured persons, and who now broke their contracts and declined to carry out their legal obligations.—Mr. MASTERMAN answered: I do not believe that any medical men who have signed an agreement to treat insured persons for three months will break that agreement before the period of the contract is completed, unless they are released from this obligation by the committee with which such an agreement has been made. If they were to take any such action, a serious situation would arise. The question of whether such conduct would be infamous in a professional respect would be for the General Medical Council to consider.

Insured Persons over Sixty-five.

In reply to Mr. WORTHINGTON EVANS, Mr. MASTERMAN said: By Section 49 (3) of the National Insurance Act persons over 65 at the commencement of the Act who come under the special provisions of that section and are members of Approved Societies are entitled to such benefits as the society determines and can provide out of their employer's and their own contributions and the State 2*d*. As far as I am aware, however, all the Approved Societies have chosen that this money should be devoted to the provision of sick pay rather than of medical treatment. Insurance Committees have the same powers and duties in the case of persons of this class who are deposit contributors as the societies have in the case of members of Approved Societies. Societies which have decided to devote the 9*d*. a week (or 8*d*. in the case of women) under Section 49 of the Act to sick pay rather than to medical benefit will make their own arrangements for medical treatment of their members outside the Act.

The Medical Service in the Highlands.

Mr. CATHCART WASON asked the Secretary to the Treasury whether, in view of the medical and nursing necessities of the Highlands and Islands disclosed in the report of the committee presided over by the honourable Member for Inverness, he could make some temporary arrangement by which doctors would receive adequate remuneration for their attendance on insured persons.—Mr. MASTERMAN said: The extra grant for mileage in the case of sparsely populated districts is now receiving the attention of the Chancellor of the Exchequer, and an announcement as to the conditions of the grant will be made in due course.

The Isle of Ely Insurance Committee.

In reply to Mr. NEWMAN, Mr. MASTERMAN said: The Isle of Ely Insurance Committee have reported that the panel is adequate to provide medical attendance for insured persons throughout their area except in the districts of Wisbech and Chatteris. In order that medical attendance may be provided for insured persons in these two districts they further invited all the practitioners in the neighbourhood to accept service under the Act, with an intimation that if they declined other alternative arrangements would have to be made with the doctors who had accepted service. The Commissioners are awaiting a further report from the Committee as to the exact position. It will be necessary that any assistants utilised by doctors on the panel shall be duly qualified medical practitioners.

Medical Benefit in Germany.

Mr. WORTHINGTON-EVANS asked the Secretary to the Treasury when the paper dealing with the cost and scope of medical benefit in Germany and giving collections of agreements entered into by the German doctors and the association under the German insurance scheme, publication of which was promised by him in July last, would be issued; and what was the reason for the delay.—Mr. MASTERMAN said in reply: An officer was sent to Germany to conduct during the autumn a detailed investigation with a view to the preparation of a report on medical benefit under the German State Insurance legislation in accordance with my promise of July 24th last. The publication of the report has been postponed in consequence of the protracted illness of the officer in question. It will, however, be laid on the table of the House to-day.

Accommodation for Tuberculosis Patients.

Mr. GODFREY LOCKER-LAMPSON asked the President of the Local Government Board what provision had been made for the supply of beds for cases of tuberculosis in the event of the beds in isolation hospitals approved by the Local Government Board under the National Insurance Act being required in an outbreak of infectious disease.—Mr. BURNS replied: The arrangements vary in different cases, but they have generally been made with a view to diminishing the likelihood of its being necessary to vacate the beds on an outbreak of disease. A large proportion of cases of tuberculosis which are receiving residential treatment could, however, be given other treatment should it be necessary at any time to remove them.

TUESDAY, JAN. 14TH.

The Medical Arrangements of Insured Persons.

Sir J. D. REES asked the Chancellor of the Exchequer whether he had instructed the Insurance Committee not to allow people to make their own arrangements for medical treatment because the Government would not allow it, and, if so, by what authority he urged the Insurance Committee to contravene the provisions of the Act to which they owed their existence.—Mr. LLOYD GEORGE said in reply: I do not know to which of the 235 Insurance Committees the right honourable gentleman refers, but in any case the answer to the first part of the question is in the negative; but I may again point out with regard to the suggestion contained in the second part of the question, that an Insurance Committee is not required by the Act to allow insured persons to make their own arrangements for medical treatment.

Priority for Whole-time Appointments.

Sir J. D. REES asked the Chancellor of the Exchequer whether he had informed the secretaries of the National Insurance Medical Practitioners' Association that priority would be given to the doctors on the panels if whole-time appointments were necessary; and, if so, by what authority he offered this preference to doctors who accepted his views in preference to those who stood by the British Medical Association.—Mr. LLOYD GEORGE answered: I would refer the honourable Member to the answer given by my right honourable friend the Financial Secretary to the Treasury and to the letter dated Dec. 18th, 1912, which has been laid on the table of the House.

Sir J. D. REES: Will this form a precedent for the use of public funds for the purpose of breaking industrial and other non-professional strikes?—Mr. LLOYD GEORGE: It has nothing to do with that. If members of the British Medical Association place their services at the disposal of the State they will be employed. We simply employ certain medical men because others refuse to be employed.

The Middlesex Insurance Committee.

Sir J. D. REES asked the Chancellor of the Exchequer whether the Insurance Commissioners had approved of the action of the Middlesex Insurance Committee in agreeing that the sum payable in respect of insured persons who had not before March 31st selected a practitioner on the panels would be divided amongst the practitioners on the panels; and if the Government had sanctioned offering those practitioners who accepted its terms additions and emoluments at the expense of those who, maintaining their pledge, declined to accept such conditions.—Mr. LLOYD GEORGE answered: Section 15 (2) (d) of the National Insurance Act and the Regulations made by the Commissioners expressly provide for the distribution amongst the practitioners on the panel of the insured persons who, after due notice, have failed to select a doctor, and the distribution is to be carried out so far as practicable under arrangements made by the practitioners on the panel themselves. These practitioners are responsible for medical treatment, if required, of such insured persons, and all money available to the Committee for the medical treatment of insured persons obtaining treatment from the panel will be distributed among these practitioners in accordance with the Regulations.

Mr. WORTHINGTON EVANS: Can the right honourable gentleman say whether any doctor who has gone on the panel can refuse to take his quota of the insured persons?—Mr. LLOYD GEORGE: The honourable gentleman knows perfectly well that there are special provisions in the Act for dealing with cases of that kind.

Mr. WORTHINGTON EVANS: Can a medical man who has gone on the panel refuse to take patients distributed by the Committee?—Mr. LLOYD GEORGE: He can refuse in the first instance, but there are provisions in the Act for distributing those who have been refused by all the doctors—a highly improbable contingency.

The Question of a State Service.

Sir J. D. REES asked the Chancellor of the Exchequer whether he organised or expressed his intention of organising a service of State-paid doctors ready to proceed to any area in order to break down the opposition of the medical profession to working on the panel system.—Mr. LLOYD GEORGE answered: In any area where the panel may be found to be inadequate the duty is laid upon the Commissioners of making alternative arrangements in conjunction with the Insurance Committee for the medical treatment of insured persons, and of such alternative arrangements that of a salaried service appears to be the one most acceptable to the insured persons themselves.

Mr. WORTHINGTON EVANS: In a case where a State service is organised and put into force, will the insured person then have a free choice of doctor?—Mr. LLOYD GEORGE: Inasmuch as the insured person is fully represented on the Insurance Committee, and he will be making the arrangements, I take it he will look after his own business.

Sanatorium Accommodation in Essex.

In reply to Mr. NEWTON, Mr. LLOYD GEORGE said: Eight sanatoria and hospitals in the county of Essex containing 159 beds have been approved by the Local Government Board for the reception of persons entitled to sanatorium benefit under the National Insurance Act. They are available for either insured persons or their dependents.

Dispensing under the Insurance Act.

Mr. TOUCHE asked the Secretary to the Treasury whether he was aware that, notwithstanding the provisions of Section 15 (3) of the National Insurance Act, doctors' dispensers who were not registered under the Pharmacy Acts, 1852 to 1868, were afraid that difficulties might arise at some future time in establishing their right to dispense medicines supplied to insured persons; and would he take into consideration the question of arranging for the registration of doctors' dispensers either by the Insurance Commissioners or the Pharmaceutical Society, or the institution of some other effective means of safeguarding the position of doctors' dispensers and of those who had acted as dispensers to public institutions.—Mr. WEDGWOOD BENN (on behalf of Mr. MASTERMAN) replied: Section 15 (5) (6) (iii.) of the National Insurance Act clearly provides that in the case of insured persons medicines may be dispensed by a person who for three years immediately prior to the passing of the Act had acted as a dispenser to a doctor or a public institution, and I do not at present see the necessity for such action as the honourable Member suggests.

Sanatorium Benefit in Ireland.

Mr. WALTER GUINNESS asked the Chief Secretary to the Lord Lieutenant of Ireland to state in how many counties in Ireland had medical officers been appointed for the purpose of the tuberculosis sanatorium benefit under the National Insurance Act; in how many cases had such officers passed a special course in the study of tuberculosis, or, where not specially qualified, if it was permissible for an officer so appointed to qualify by taking out his course in tuberculosis study subsequent to his appointment; and if the Irish Local Government Board would sanction such a proceeding.—Mr. BIRRELL replied: The councils of 22 counties or county boroughs have appointed medical superintendents of tuberculosis dispensaries under the Tuberculosis Prevention (Ireland) Act, 1908. Two of these officers have qualifications as prescribed by order of the Local Government Board of July 19th last, which requires as a condition of appointment special experience in the diagnosis and treatment of tuberculosis. In other cases the officers are undergoing a special course of instruction. This represents the settled policy of the Board.

WEDNESDAY, JAN. 15TH.

The Allocation of Patients under the Insurance Act.

Replying to Mr. TOUCHE, Mr. MASTERMAN said: In cases in which payment by attendance is adopted an insured person need not choose his doctor until he is ill. In areas in which the capitation system of payment is adopted all insured persons in the area who have not already made their choice will be allocated to doctors on the panel, after a given date to be announced by the Insurance Committee. Each Committee will exercise its own discretion as to the date which it will fix. It is quite competent for an Insurance Committee, with the consent of the practitioners on the panel, to make at once a provisional allocation of all insured persons amongst the doctors on the panel, with the condition that any insured person so allocated may, if he pleases, within the period announced, select one of the other doctors on the panel.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
Who's Who in Science. International. 1913. Edited by H. H. Stephenson. Price 8s. net.

FISCHER, GUSTAV, Jena.
Lehrbuch der Chirurgie. Herausgegeben von Prof. Wullstein, Halle a.S., und Prof. Wilms, Heidelberg. Dritte umgearbeitete Auflage. Erster Band: Allgemeiner Teil, Chirurgie des Kopfes, des Halses, der Brust und der Wirbelsäule. Price, paper, M.10.50; bound, M.11 50. Zweiter Band: Bauchdecken, Leber, Milz, Pankreas, Magen, Darm, Hernien, Harn- und Geschlechts-Organe und Becken. Price, paper, M.8; bound, M.9. Dritter Band: Extremitäten. Price, paper, M.11; bound, M.12.

WILLIAMS AND NORGATE, 14, Henrietta-street, Covent Garden, London, W.C.
Bibliographie des Livres Français de Médecine et de Sciences. Publiée par la Section de Médecine du Syndicat des Éditeurs. 1900–1912. Price not stated.

YEAR BOOK PRESS, THE, 31, Museum-street, London, W.C.
The Directory of Women Teachers and Other Women Engaged in Higher and Secondary Education. 1913. Price 5s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALLAN, PETER, M.D., Ch.B. Edin., D.P.H., has been appointed Medical Superintendent at the Romsley Hill Home for Consumptives, Birmingham.

COMPTON, ALWYNE, F.R.C.S. Eng., has been appointed Honorary Assistant Surgeon to the German Hospital, Dalston.

CORFIELD, HENRY OAKLEY, M.D., C.M. Edin., has been appointed Medical Officer to the Long Ashton Workhouse by the Long Ashton (Somerset) Board of Guardians.

CROSSLEY, LEONARD, M.D. Edin., has been appointed Tuberculosis Officer for the County of Wilts.

DIGGLE, FRANK HOLT, M.B., Ch.B. Manch., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Resident Medical Officer to Queen Charlotte's Lying-in Hospital.

FOSS, EDWIN VINCENT, M.B., B.Ch. Bristol, L.R.C.P. Lond., M.R.C.S., has been appointed Public Vaccinator for the St. George District by the Bristol Board of Guardians.

FOSTER, STANLEY, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health of the Borough of Newport, Isle of Wight.

INGRAM, JOHN DOUGALL, M.B., Ch.B. Edin., D.P.H. Camb., has been appointed Resident Medical Assistant at the City Hospital for Infectious Diseases, Newcastle-upon-Tyne.

KILBRIDE, JOHN, M.B., B.Ch. N.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Athy District of the county of Kildare.

MACKLIN, ALEX. HEPBURN, M.B., Ch.B. Vict., has been appointed Junior House Surgeon at the Blackburn and East Lancashire Infirmary.

MARKS, HERBERT J., M.D., B.C. Cantab., has been appointed Honorary Surgeon for Diseases of the Ear, Nose, and Throat at the Royal Prince Alfred Hospital, New South Wales.

PATRICK, J. KING, M.B., Ch.B. Glasg., D.P.H., has been appointed Tuberculosis Medical Officer of Health for Hampstead.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

AYLESBURY, BUCKS COUNTY LUNATIC ASYLUM, Stone.—Assistant Medical Officer, unmarried. Salary £185 per annum, with board and apartments.

BATH, EASTERN DISPENSARY.—Resident Medical Officer. Salary £130 per annum, with rooms, coals, gas, and attendance.

BATH, ROYAL UNITED HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £60 per annum, with board, residence, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Surgeon, unmarried. Salary £200 per annum, with rooms, fire, light, and attendance.

BIRMINGHAM, QUEEN'S HOSPITAL.—Radiographer. Salary £100 per annum.

BIRMINGHAM UNION, DUDLEY-ROAD INFIRMARY.—Assistant Medical Officer. Salary £125 per annum, with apartments, rations, laundry, and attendance.

BRADFORD POOR-LAW UNION HOSPITAL AND WORKHOUSE.—Assistant Resident Medical Officer, unmarried. Salary £130 per annum, with rations, apartments, and laundry.

BRADFORD ROYAL INFIRMARY.—Resident Surgical Officer, unmarried. Salary £150 per annum, with board and residence.

BRENTFORD UNION INFIRMARY, WORKHOUSE, AND SCHOOLS.—Second Assistant Medical Superintendent, unmarried. Salary £125 per annum, with apartments, rations, &c.

BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer. Salary at rate of £50 per annum, with board, apartments, and laundry. Also Dental House Surgeon. Salary £100 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with residence, board, and washing.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—House Surgeon, unmarried. Salary £80 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Two House Physicians for six months. Salary at rate of £75 per annum, with board, residence, and washing.

DAVOS PLATZ, SWITZERLAND, QUEEN ALEXANDRA SANATORIUM.—Medical Superintendent. Salary £200 per annum, with private flat, board, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £75 per annum, with board, residence, and laundry.

HACKNEY UNION INFIRMARY, High-street, Homerton, N.E.—Junior Assistant Medical Officer. Salary £130 per annum, with rations, apartments, and attendance.

HARROGATE INFIRMARY.—Resident House Surgeon. Salary £75 per annum, with board, residence, and laundry.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—House Physician and House Surgeon, unmarried, for six months. Salary £30 each, with board, residence, and washing allowance. Also Casualty Medical Officer. Salary £200 per annum, with luncheon.

HOSPITAL FOR WOMEN, Soho-square, W.—Junior Resident Medical Officer for six months. Salary at rate of £30 per annum, with board, lodging, and laundry.

LABORATORIES OF PATHOLOGY AND PUBLIC HEALTH, 38, New Cavendish-street, W.—Fourth Assistant Pathologist.

LEEDS GENERAL INFIRMARY.—House Physician. Board, residence, and laundry provided.

LEEDS, WEST RIDING ASYLUM, Menston.—Fourth Assistant Medical Officer. Salary £150 per annum, with board and apartments.

LEICESTER CORPORATION TUBERCULOSIS DISPENSARY.—Senior Medical Officer. Salary £300 per annum.

LEICESTER, LEICESTERSHIRE AND RUTLAND COUNTY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, residence, and laundry.

LEICESTER ROYAL INFIRMARY.—Assistant House Physician for six months. Salary at rate of £30 per annum, with board, apartments, and washing.

LEICESTERSHIRE COUNTY COUNCIL.—Tuberculosis Medical Officer. Salary at rate of £500 per annum.

LIVERPOOL, CITY INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LIVERPOOL, COUNTY ASYLUM, Rainhill.—Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, board, attendance, and washing.

LIVERPOOL EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum.

LIVERPOOL UNIVERSITY, FACULTY OF MEDICINE.—Lectureship in Mental Diseases.

LONDON HOSPITAL, Whitechapel, E.—Assistant Surgeon.

LOWESTOFT HOSPITAL.—House Surgeon, unmarried. Salary at rate of £100 per annum, with board, residence, and laundry.

MAIDSTONE, KENT COUNTY COUNCIL.—Medical Officer of Health. Salary £800 per annum.

MAIDSTONE, KENT COUNTY OPHTHALMIC HOSPITAL.—House Surgeon, unmarried. Salary at rate of £100 per annum, with board and residence.

MARGATE, ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £100 per annum, with board, residence, and laundry.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Surgeon. Salary at rate of £60 per annum, with board and washing. Also Assistant House Surgeon. Salary at rate of £40 per annum, with board and washing. Each for six months.

MIDDLESEX HOSPITAL, W.—Physician and Assistant Physician.

NEWCASTLE-UPON-TYNE, CITY AND COUNTY TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £500 per annum.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.

NORTH RIDING OF YORKSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.

OXFORD COUNTY ASYLUM, Littlemore, near Oxford.—Junior Assistant Medical Officer. Salary £150 per annum, with apartments, board, and washing.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months. Salary £75 per annum, with board, residence, and washing.

PUTNEY HOSPITAL, Lower Common, Putney, S.W.—Resident Medical Officer. Salary £100 per annum, with board, &c.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, residence, and washing.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Clinical Assistant to Radiographer in X Ray Department.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Curator and Librarian. Salary at rate of £120 per annum, with lunch.

ROYAL NAVAL MEDICAL SERVICE.—Twenty-five appointments.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Honorary Gynæcologist.

ST. ALBANS, HERTS COUNTY ASYLUM, Hill End.—Junior Assistant Medical Officer, unmarried. Salary £170 per annum, with board, lodging, and washing.

ST. BARTHOLOMEW'S HOSPITAL.—Assistant Surgeon.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, W.C.—Honorary Surgeon. Also Clinical Assistant.

SWANSEA UNION WORKHOUSE.—Assistant Medical Officer. Salary about £235 per annum.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £40, with board, lodging, and laundry.

WESTERN DISPENSARY, Rochester-row, Westminster.—Vacancy on Attending Medical Staff.

WESTMORLAND CONSUMPTION SANATORIUM AND HOME, Grange-over-Sands.—Assistant Medical Officer. Salary £200 per annum, with board and residence.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Assistant Honorary Surgeon in the Eye, Ear, and Throat Departments.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Egremont, in the county of Cumberland; at Kettering, in the county of Northants; at Llandyssil, in the county of Cardigan; at Perranporth, in the county of Cornwall; at Sandhead, in the county of Wigtown; and at Swinton, in the county of Lancs.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for Sunderland and Seaham Harbour County Courts. Application should be addressed to the Private Secretary, Home Office, not later than Feb. 5th.

Births, Marriages, and Deaths.

BIRTHS.

FOULDS.—On Jan. 12th, the wife of Captain M. F. Foulds, R.A.M.C., of a daughter.

RUTHERFOORD.—At Bilaspur, C. P. India, on Jan. 14th, 1913, the wife of Captain T. C. Rutherfoord, Indian Medical Service, of a son (Edward).

MARRIAGES.

VERNON-BETTS—DIBDIN.—On Jan. 8th, at Christ Church, Woburn-square, Captain Alfred John Vernon-Betts, M.B., Indian Medical Service, to Victoria Irene, fourth daughter of Robert William Dibdin, of Russell-square, London, and Hillside, Kingsdown, Deal.

DEATHS.

DICKINSON.—On Jan. 9th, at Trebrea Lodge, Tintagel, William Howship Dickinson, M.D., F.R.C.P., J.P., Hon. Fellow of Gonville and Caius College, Cambridge, Consulting Physician to St. George's Hospital and the Children's Hospital, Great Ormond-street, aged 80 years.

SIORDET.—On Dec. 22nd, 1912, at Villa Cabrolles, Mentone, France, James Lewis Siordet, M.D., F.R.C.P., in his 84th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE LONDON MICROSCOPE.

A MODEL of this new microscope intended for use in universities and schools has been submitted to us for inspection by Messrs. R. and J. Beck, Limited, of 68, Cornhill, London, E.C. Its great point is stability, the outcome of a specially designed base and pillar. The position of the centre of the inclining joint is so placed as to give greater stability when the instrument is in a horizontal osition, whilst not interfering with its vertical rigidity. The size of the base has further been increased to insure steadiness under all conditions. The want of stability in microscopes has long been recognised as a weak spot, and we are glad that particular attention has been given to this detail. The stage is large and square, the coarse adjustment is by a spiral rack and pinion, and the fine adjustment is of the lever type. An iris diaphragm is attached. The instrument is built firmly, but with ease of movement; it can be lifted without shifting the adjustments, and altogether is constructed with a watchful eye to modern requirements.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1913:—

March 17th–20th (Paris).—International Congress of Physical Education.
(Easter week) (Berlin).—Fourth International Congress for Physiotherapy.
April 3rd–9th (London).—International Congress of Historical Studies.
,, 6th–12th.—Health Week.
,, 26th (Ghent) (opens).—International Exhibition.
June (London).—International Royal Congress
July 7th–12th (Exeter).—Twenty-eighth Congress of the Royal Sanitary Institute.
Aug. 6th–12th.—(London).—Seventeenth International Congress of Medicine.
,, 20th (Ghent).—Third International Congress of Neurology and Psychiatry.
Sept. 2nd–6th (Groningen).—International Physiological Congress.
,, 9th–13th (Vienna).—Second International Congress of Life Saving and Prevention of Accidents.
,, 10th–17th (Birmingham).—British Association.
,, 22nd–28th (Milan).—Fourteenth International Anti-alcoholic Congress
(London).—Historical Medical Exhibition. (Organised by Mr. Henry S. Wellcome.)
(Chicago).—Congress of the International Association of Refrigeration.
(Washington).—Congress of American Physicians and Surgeons.
(Paris).—Congress of Physical Education.
(Paris).—Congress of the Royal Institute of Public Health.
(Buffalo).—Fourth International Congress of School Hygiene.

In 1914:—

Aug. 10th–15th (St. Petersburg).—Twelfth International Congress of Ophthalmology.
(Vienna).—Third International Congress for Professional Diseases.
(Auckland, N.Z.).—Australasian Medical Congress.
(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.
(Washington, D.C.).—International Congress of Americanists.
(London).—International Dental Congress.
(Paris).—Fourth International Medical Congress on Industrial Accidents.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 15th, 1913.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 9	29·98	S.E.	...	66	49	44	45	45	Fine
,, 10	29·94	S.E.	...	41	41	41	40	41	Overcast
,, 11	29·80	S.E.	...	39	38	36	36	36	Overcast
,, 12	29·69	W.	0·33	58	44	36	35	36	Fine
,, 13	29·83	S.W.	...	40	39	33	33	33	Foggy
,, 14	29·73	S.W.	0·09	54	44	33	37	38	Cloudy
,, 15	29·32	S.	0·03	67	49	37	42	42	Raining

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Dr. J. Homans: The Relation of the Islets of Langerhans to the Pancreatic Acini under various Conditions of Secretory Activity (communicated by Prof. E. H. Starling).—Mr. E. Mellanby: The Metabolism of Lactating Women (communicated by Dr. F. G. Hopkins).—Dr. F. W. Edridge-Green: (1) Colour Adaptation (communicated by Prof. E. H. Starling); (2) Trichromic Vision and Anomalous Trichromatism (communicated by Prof. E. H. Starling).—Mr. W. E. Agar: Transmission of Environmental Effects from Parent to Offspring in Simocephalus (communicated by Prof. J. G. Kerr).—Mr. H. O. Feiss and Mr. W. Cramer: Contributions to the Histo-chemistry of Nerve; on the Nature of Wallerian Degeneration (communicated by Prof. E. A. Schäfer).—Mr. I. B. J. Sollas: On Onychaster, a Carboniferous Brittle-star (communicated by Prof. W. J. Sollas).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY.

SECTION OF THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries: H. H. Dale, W. Langdon Brown): at 4.30 P.M.

Discussion:

The Non-operative Treatment of Malignant Disease (to be opened by Dr. T. J. Horder).

The following will contribute to the discussion:—Dr. S. Monckton Copeman, F.R.S., Mr. W. D. Harmer, Dr. H. Lewis Jones, Dr. R. Knox, Mr. Cecil Rowntree, Dr. N. S. Finzi, Dr. G. Herschell, Prof. A. S. Grünbaum, Dr. Alexander Haig.

GENERAL MEETING OF FELLOWS at 4.45 P.M.

Election of Candidates for Fellowship.

SECTION OF PATHOLOGY (Hon. Secretaries—H. R. Dean, Gordon W. Goodhart): at 8.30 P.M.

Dr. Dennis Embleton: Preliminary Communication on Pathogenicity and Virulence of Bacteria.

Dr. E. Paller: Remarks on Tuberculous and Non-tuberculous Sputum.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—H. S. Clogg, F. Langmead, P. N. Blake-Odgers): at 4.30 P.M.

Cases:

Mr. Duncan Fitzwilliams: (1) Hernia of Lung; (2) Axillary Swelling for Diagnosis.

Mr. Sydney Stephenson: Interstitial Keratitis and Osteo-periostitis of the Tibia treated with Neosalvarsan.

Dr. R. C. Jewesbury: Two Cases of Heart Disease.

Mr. R. C. Elmslie: Three Cases of an Unusual Form of Disease of the Hip-joint—"Calve's pseudocoxalgie."

Dr. C. W. Chapman: Arterio-sclerosis in an Undersized Girl.

Mr. Douglas Drew: Plastic Operation for Contraction of the Thumb.

Specimens:

Dr. J. D. Rolleston: Renal and Ureteral Anomaly.

Mr. Philip Turner: Congenital Hypertrophic Stenosis of the Pylorus, Gastro-enterostomy.

Papers:

Dr. Hugh Thursfield and Dr. H. W. Scott: A Case of Sub-aortic Stenosis.

Dr. Crookshank: A Note on Mongolism.

SECTION OF EPIDEMIOLOGY (Hon. Secretaries—G. S. Buchanan, William Butler): at 8.30 P.M.

Paper:

Dr. J. A. H. Brincker: The Behaviour of Diphtheria in Schools.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Demonstration of Pathological Specimens. Cases sent for Consultation. Exhibition of Cases by the President, Dr. Griffith, Dr. Sibley, Dr. Bunch, and Dr. Phibbs. 5 P.M., Discussion on Bullous Eruptions (opened by Dr. J. L. Bunch).

CHELSEA CLINICAL SOCIETY, Club Rooms of the Medical School, St. George's Hospital, S.W.

TUESDAY.—8.30 P.M., Mr. H. W. Bayly: Salvarsan, its Place in Therapeutics. A discussion will follow.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY.—8.30 P.M., Prof. B. Moore: First Steps towards a State Medical Service.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, Lecture Theatre of the Society, 17, Bloomsbury-square, W.C.

WEDNESDAY.—8 P.M., Prof. R. T. Hewlett: Microbiology and Pathological Chemistry and Microscopy in Relation to the Pharmacist (Lecture I.). (Post-Graduate Lecture.)

HUNTERIAN SOCIETY, St. Bartholomew's Hospital, E.C.

WEDNESDAY.—9 P.M., Clinical and Pathological Evening. Cases will be shown by the President, Dr. H. Humphris, Dr. H. Davis, Mr. Swainson and Mr. Maynard.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Sir John Collie: Malingering—Accidents and Sickness.

TUESDAY.—4 P.M., Dr. H. L. Tidy: Clinique (Medical). 5.15 P.M., Lecture:—Dr. T. D. Lister: Tuberculin Treatment of Ambulant Cases of Phthisis Pulmonalis.

WEDNESDAY.—4 P.M., Mr. L. J. Austin: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. D. Forsyth: Psycho-analysis.

THURSDAY.—4 P.M., Mr. C. W. Rowntree: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. E. Clarke: Myopia and its Treatment.

FRIDAY.—4 P.M., Dr. D. Grant: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 11 A.M., Mr. Addison: Demonstration of Minor Operations 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. B. Harman: Squint—Treatment and Cure.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Diseases of the Skin. 5 P.M., Lecture:—Dr. Davis: Common Affections of the Ear.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. Bernstein: Clinical Pathology.

FRIDAY.—10 A.M., Gynæcological Operations. 10.30 A.M., Lecture:—Dr. Owen: Practical Medicine. 12.15 P.M., Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Diseases of the Skin. 5 P.M., Lecture:—Dr. Davis: Common Affections of the Throat and Nose.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat. 3.15 P.M., Special Lecture:—Sir Dyce Duckworth: The Varieties of Arthritis met with in Seamen.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.15 P.M., Sir Malcolm Morris: Skin.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine. 3.40 P.M., Special Lecture:—Dr. R. O. Moon: Angina Pectoris.

FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford; Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—10 A.M., Dr. W. Steuart: Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY.—4.30 P.M., Dr. T. Lewis: Observations on Myocarditis. (Opening Lecture.)

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Demonstration:—Dr. Chappel: Selected Medical Cases.

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. A. Duncan).

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4.30 P.M., Lecture:—Dr. Wethered: The Treatment of Complications of Pulmonary Tuberculosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Batten: Spinal Tumours.

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. Ormerod: Clinical.

CANCER HOSPITAL, Museum of the Hospital, Fulham-road, S.W.

WEDNESDAY.—5 P.M., Mr. W. E. Miles: Cancer of the Rectum (illustrated by cases and microscopic and other specimens).

UNIVERSITY OF LONDON, University College, Gower-street, W.C.

WEDNESDAY AND FRIDAY.—5 P.M., Dr. P. McBride: Sir Felix Semon, his Work and its Influence on Laryngology. (Semon Lectures.)

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—2 P.M., Dr. W. Griffith: The Pathology of the Skin.—6 P.M., Mr. W. K. Sibley: Eczema.

THURSDAY.—6 P.M., Dr. M. Dockrell: Acne Vulgaris in its Three Stages—I., Comedo; II., Indurata; III., Necrotica.

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Dr. E. B. Leech: The Value of Various Symptoms, Physical Signs, and Methods of Examination in Dyspepsia. (Post-Graduate Clinic.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY.—4.30 P.M., Dr. Wilkinson: Demonstration of Medical Cases. (Post-Graduate Clinic.)

FRIDAY.—4.30 P.M., Mr. J. W. Smith: Surgical Demonstration. (Post-Graduate Clinic.)

SALFORD ROYAL HOSPITAL.

TUESDAY.—Mr. J. P. Buckley: Spinal Caries. (Post-Graduate Demonstration.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1912 were given in THE LANCET of Dec. 28th, 1912.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1912 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

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Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

The following journals, magazines, &c., have been received.—Journal of Anatomy and Physiology, Revue d'Hygiène et de Police Sanitaire, Archives of the Roentgen Ray, Annales de l'Institut Pasteur, Archives Internationales de Neurologie, Indian Medical Gazette, Children's Diseases, Shield, Medical Review, British Journal of Inebriety, St. Paul Medical Journal, Bulletins et Mémoires de la Société de Radiologie Médicale de Paris, La Clinique Ophthalmologique, Charing Cross Hospital Gazette, Middlesex Hospital Journal, Revue de Médecine, Revue de Chirurgie, North American Review, Canadian Journal of Medicine and Surgery.

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